

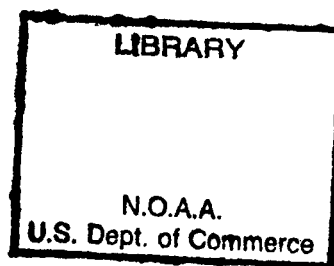


THE ARAB REPUBLIC OF EGYPT

ANNUAL METEOROLOGICAL REPORT

1970

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THE EGYPTIAN METEOROLOGICAL AUTHORITY

CAIRO

National Oceanic and Atmospheric Administration

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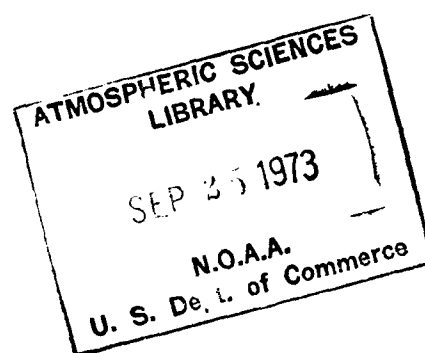
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PUBLICATIONS OF THE METEOROLOGICAL AUTHORITY OF THE ARAB REPUBLIC OF EGYPT — CAIRO

In fulfilment of its duties, the Egyptian Meteorological Authority issues several reports and publications on weather, climate and agro-meteorology. The principal publications are described on this page.

Orders for publications should be addressed to :

“Chairman of the Board of Directors, Meteorological Authority, Kubri-el-Qubbeh — CAIRO”.

THE DAILY WEATHER REPORT

This report is issued daily by the Meteorological Authority since the year 1901. It includes surface and upper air observations carried out by the relevant networks of the Republic at the principal hours of observations.

As from January 1968, this report was revised to include a condensed representative selection of surface and upper air observations besides the 1200 U.T. surface & 500 mb charts.

As from 1st January 1972, the Daily Weather Report will not be issued or distributed because it does not serve no longer any good purpose as it used to be in the past. The Meteorological Authority is ready to supply the recipients of the Report with any information used to be included in it, if they so desire.

THE MONTHLY WEATHER REPORT

First issued in 1909, the Monthly Weather Report served to give a brief summary of the weather conditions that prevailed over Egypt during the month, with a table showing the mean values for few meteorological elements and their deviations from the normal values. From 1954 to 1957 this report was in a rapid state of development and extension resulting into a voluminous report on January 1958 giving surface, upper air, and agro-meteorological data for Egypt.

As from January 1964, the Monthly Weather Report was pressed to give climatological data for a representative selection of synoptic stations.

THE AGRO-METEOROLOGICAL ABRIDGED MONTHLY REPORT

Gives a review of weather experienced in the agro-meteorological stations of Egypt as well as monthly values of certain elements.

THE ANNUAL REPORT

This report gives annual values and statistics for the various meteorological elements, together with a summary of the weather conditions that prevailed during all months of the year.

CLIMATOLOGICAL NORMALS FOR EGYPT

A voluminous edition was issued in March 1968 which brings normals and mean values up till 1960.

METEOROLOGICAL RESEARCH BULLETIN

First issued in January 1969 on a bi-annual basis. It includes research works carried out by members of staff “The Meteorological Institute for Research and Training” and the Operational Divisions of the Meteorological Authority.

TECHNICAL NOTES

As from October 1970, the Meteorological Authority started to issue a new series of publications in the form of Technical Notes (non periodical) on subjects related to studies and applications of meteorology in different fields for the benefit of personnel working in these fields.

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FOREWORD

The "Annual Meteorological Report" for Egypt was issued regularly since the year 1900 by the Survey Department at Cairo. The Annual report of the year 1900 contained the daily, monthly and annual values of different meteorological elements at Abbasiya (Cairo) and other few climatological stations in Egypt and Sudan.

With the closing of Abbasiya Observatory as the Principal Meteorological Station in the year 1904 and replacing it by Helwan Observatory, it had been decided starting from the Annual Meteorological Report of 1904 to separate the Annual Meteorological Report into two independent parts, the first of which was dealing with the whole work of Helwan Observatory, while the second part included the daily, monthly and annual values of different meteorological elements at selected climatological and rainfall stations together with the River data.

Starting from the issue of 1941 the Annual Meteorological Report contained no more "daily values" but only monthly and annual values.

As from the issue of 1958 the Annual Meteorological Report took a new form. It started with a general annual review of weather together with twelve monthly summaries of weather conditions in Egypt. In addition, it included a new set of tables giving more detailed surface and upper air climatological data for selected stations. The annual review of Agro-Meteorological Station at Giza ; the monthly and the annual

values of routine observations made at the fields of the station were also included in the Annual Report. This annual review gave a brief summary of the characteristic features of the different meteorological and micro meteorological elements of the year ; more weight was given in this review to elements which are of interest to agriculturists. Moreover, the Annual Meteorological Report specified the different climatic district in Egypt. It also contained explanatory notes about methods of observations of different meteorological elements ; instruments used in these observations, their exposure and methods of deriving daily, monthly and annual mean values and frequencies of different elements.

As from 1960 tables appearing in the Annual Meteorological Report have been totally revised and some new tables have been introduced to include more detailed climatological data.

As from 1964, the Annual Meteorological Report was again totally revised. The number of meteorological stations appearing in the Report have been concentrated in the main synoptic stations working mostly continuously 24 hours. In addition, climatological data included in the Report will be confined to the annual mean values, annual totals, annual frequencies and annual absolute values. More specific climatological data have to be requested from the Meteorological Authority.

Cairo, November 1972

Chairman (M. F. TAHA)

Board of Directors

INTRODUCTION AND EXPLANATION OF THE TABLES

For the purpose of this Annual Meteorological Report, the Arab Republic of Egypt is divided into six climatic districts as follows:

Number	District	Number	District
I	Mediterranean Area	IV	Upper Egypt
II	Lower Egypt	V	Western Desert
III	Cairo Area	VI	Red Sea Area

The data included in Tables A1, A2, A3, A4 and A5, are based on surface observations made at a representative selection of the basic network of synoptic stations. The data included in Tables B1, B2, B3 refer to Upper Air Observations. The data included in Tables C1, C2, C3, C4 & C5, are based on observations taken at the Agro-Meteorological stations at M. Matruh, Tahrir, Bahtim and Kharga. The observation fields at Tahrir, M. Matruh, Bahtim and Kharga are considered for the moment as dry and bare fields. At Kharga Oasis, the observation field is of the size of about 4000—6000 square metres.

The soil characteristics of these fields are :

	M. * MATRUH	TAHRIR	BAHTIM	KHARGA
Top soil type . .	Not available at present	Pure sand	Not available at present	Sandy loam granular Not-compact
Top soil depth .	„	More than 3 metres	„	20 cms.
Sub soil type . .	„	Pure sand	„	Platey clay non-compact
Slope of ground and its direction. .	„	½ towards East & North	„	Flat (0-03%)
Level of Water table	„	More than 5 metres	„	More than 5 Metres

* Agro-meteorological observations were taken at M. Matruh station since September 1969, after closing of El Kasr station in August 1969.

Except for the wind speed which is expressed in knots, the metric units are used throughout this report and are as follows:

- The atmospheric pressure is expressed in millibars (one millibar = 1000 dynes per square centimetre = The pressure due to 0.7501 millimetre of mercury at 6°C at latitude 45°).
- Air and soil temperatures in degrees celsius (°C),
- Relative humidity (%),
- Rainfall in millimetres,
- Snow depth in centimetres,
- Duration of bright sunshine in hours,
- Sky cover in octas,
- Evaporation in millimetres,
- Altitude of pressure surface in geopotential metres,
- Mean wind speed of the whole day, and of the day-time and the night-time intervals in metres per second,
- (Solar + Sky) radiation in gram-calories per centimetre square,
- Vapour Pressure in millimetres.

EXPLANATORY NOTES ON TABLES

SURFACE DATA

TABLE A 1.—Annual mean daily values of the Atmospheric Pressure, Air Temperature, Relative Humidity, Piche Evaporation and Total Bright Sunshine Duration.

This table gives the following data :

- The annual mean daily values of the M.S.L. Pressure and their deviations from the corresponding normal values.
- The annual mean values of maximum air temperature (A), minimum air temperature (B) and $\frac{A+B}{2}$ and their deviations from their corresponding normal values.
- The annual mean daily values of dry bulb temperature, wet bulb temperature and relative humidity and their deviations from their corresponding normal values.
- The total actual and the total possible durations of bright sunshine during the year; the percentage of the total actual with respect to the possible duration.
- The annual mean daily values of Piche Evaporation.

The annual mean daily values of the atmospheric pressure, air temperature, relative humidity & Piche evaporation are the arithmetic means of the corresponding monthly mean daily values during the year.

The monthly mean daily value of the atmospheric pressure corrected to Mean Sea Level (M.S.L.) is the arithmetic mean over the month of the corresponding daily hourly values or of the daily observations taken at the 8 synoptic hours (00, 03, 06, 09, 12, 15, 18 & 21 U.T.). The atmospheric pressure is measured by mercury barometers installed indoors. The M.S.L. Pressure is the barometer reading corrected for the height of the barometer cistern above or below the Mean Sea Level at the station. Corrections for index, temperature and latitude have been applied to the barometer readings before reduction to M.S.L. In case of stations which do not take some of these synoptic observations, the pressure for these hours is computed from the records of barographs placed indoors at the stations.

The monthly mean values of the maximum (A) and of the minimum (B) air temperatures are the arithmetic means of their corresponding daily values over the month. The maximum (mercury) and the minimum (alcohol) thermometers are freely exposed in the louvered screens with their bulbs at a height of 160 to 170 centimetres above the ground.

The monthly mean values of $\frac{A+B}{2}$, are computed from their corresponding daily calculated values over the month.

The monthly mean daily values of the dry and of the wet bulb air temperatures are the arithmetic means over the month of their corresponding daily hourly values or of their corresponding values at the 8 synoptic hours (00, 03, 06, 09, 12, 15, 18 & 21 U.T.). The dry and wet bulb thermometers used are of the mercury type and freely exposed in sloping double roofed louvered screens with their bulbs at a height 140—150 centimetres above the ground. In case of stations which do not take observations at some synoptic hours, values of the dry and wet bulb temperature for these synoptic hours are extracted from the records of recording dry & wet thermographs placed in the louvered screens at the stations.

The monthly mean daily values of the relative humidity are derived from the mean daily values during the month of the dry and wet bulb air temperatures using Jelinek's Psychrometer-Taflen (Leibzig 1911). The mean daily values of the dry and wet bulb air temperatures are derived as in the last paragraph.

The monthly mean daily values of Piche evaporation are the arithmetic means over the month of its daily values. Evaporation measurements are taken once daily at 0600 U.T. and give the evaporation for the previous 24 hours. The evaporation readings are measured by a Piche tube freely exposed in sloping double roofed louvred screens, the evaporation disc has an effective area of 10.1 centimetre square, white in colour and at a height of 140—150 centimetres above the ground.

The annual values of the actual duration and of the possible duration of bright sunshine are the sum of their corresponding monthly values during the year. In calculating the possible duration of sunshine for a given day, the period of cut off for that day caused by obstacles such as mountains, are eliminated from the possible duration with an ideal flat horizon. In case of stations where the record of a day or more is missing, the total actual duration is given between brackets and a note is added at the end of the table giving the actual number of records (days) used in summing up this total actual. In such cases the corresponding total possible duration is also given in brackets and it is the sum of the annual possible duration of the days of the available records. The duration of bright sunshine is measured by the Campbell-Stokes sunshine recorders which are suitably exposed.

TABLE A 2.—Maximum and Minimum Air Temperatures.

This table gives the following data :

—The extreme values of the maximum and of the minimum air temperatures observed during the year and their dates of occurrences.

—The number of days during the year with maximum air temperatures above and with minimum air temperatures below, specified limits.

—The annual mean daily values of the grass minimum air temperatures and their deviations from the corresponding normal values.

Higher and lower limits of both maximum and minimum air temperatures during the year and their corresponding dates of occurrences are extracted from the daily readings of maximum (mercury) and minimum (alcohol) thermometers. These dates are included for actual occurrences up to three (last three dates) ; when exceeding three, the symbol * is added beside the last three dates.

The number of days during the year with maximum air temperatures above 25°C, 30°C, 35°C, 40°C & 45°C and with minimum air temperatures below 10°C, 5°C, 0°C & — 5°C are included also in this table under separate columns.

The types and exposure of the maximum and of the minimum thermometers are as indicated in notes on table A 1.

The annual mean values of grass minimum temperatures are the arithmetic means over the year of the corresponding monthly mean values. The monthly mean values are the arithmetic means over the month of their corresponding daily values. The grass minimum temperature is measured by an ordinary minimum (alcohol) thermometer suitably exposed in the open air at the station field on a special stand with its bulb at a height of 5 centimetres above ground just touching the grass tops if there is any. Grass minimum thermometer readings are taken daily on a routine base at 0600 U.T.

TABLE A 3.—Sky Cover and Rainfall.

This table gives the following data :

- The annual mean values of the total sky cover at the principal synoptic hours of observations and of the daily total sky cover.
- The total amount of rainfall during the year and its deviation from the corresponding normal value.
- The maximum amount of rainfall in one day and its date of occurrence.
- The number of days with amounts of rainfall reaching or exceeding specified limits.

The annual mean values of the total sky cover at the principal synoptic hours (00, 06, 12 & 18 U.T.) and of the daily total sky cover are the arithmetic means over the year of the corresponding monthly mean values. The monthly mean values of the total sky cover at the principal hours are computed from their corresponding daily routine values observed during the month. The monthly mean values of the daily total sky cover are the arithmetic means over the month of the daily hourly values or of the daily observations taken at the 8 synoptic hours (00, 03, 06, 09, 12, 15, 18 & 21 U.T.). Sky cover is in octas.

The total annual rainfall is the sum of the total monthly rainfall during the year. The total monthly rainfall is the sum of the daily rainfall during the month. The maximum daily rainfall and the number of days with rain < 0.1 and equal or more than 0.1, 1, 5, 10, 25 & 50 mms. are extracted from the routine daily rainfall totals during the year. The rainfall for a given day is the amount of rain which has fallen during the 24 hours commencing at 0600 U.T. of that day ; when the amount of rain which has fallen is not large enough to be measured (less than 0.1 mm.) the term "Trace" is entered as (Tr.). The amount of rainfall measured includes the water equivalent of the rain water which has frozen after falling and the water equivalent of solid precipitation such as hail if any. Dates of maximum rain in 24 hours are included for actual occurrences up to three (last three dates) ; when exceeding three, the symbol * is added besides the last three dates.

The amount of rainfall is normally measured by ordinary rain gauges. Some selected stations are also equipped with a recording type of rain gauge. The rim of both types of rain gauges are at a height of 90—100 cms above the ground.

TABLE A 4.—Annual Frequency of Occurrence of Miscellaneous Weather Phenomena.

This table gives the annual number of days of occurrence of rain, snow, ice pellets, hail, frost, thunderstorm, mist, fog, haze, thick haze, dust or sandrising, dust or sandstorm, gale, clear sky & cloudy sky. Except for rain (see notes on table A 3) the days of occurrence of these weather phenomena are those days during which the phenomenon has occurred at any time between 2200 and 2200 U.T. for stations working 24 hours, but for stations working less, this table gives the annual frequency of occurrence of these phenomena during hours of observations only.

In compiling this table, the terminology and definitions of these different weather phenomena are as follows.

- A day of rain is the day during which the total amount of rainfall is 0.1 millimetre or more.
- A day of snow is the day during which snow or snow flakes or snow showers is or are observed even if it is or (they are) so small in quantity as to yield no measurable amounts of precipitation in the rain-gauge.
- A day of ice pellets is the day during which ice pellets are observed even if they are so small in quantity as to yield no measurable amounts of precipitation in the rain-gauge.

— A day of hail is the day during which either one or more of the following types of precipitation is or are observed even if they are so small in quantity as to yield no measurable precipitation in the rain-gauge :

- Soft hail
- Small hail
- Hail stone

— A day of frost is the day during which frost is observed at the station.

— A day of thunderstorm is the day during which thunder is heard at the station whether lightning is seen or not. A day on which lightning is seen but thunder is not heard at the station is not counted as a day of thunderstorm.

— A day of mist is the day during which the surface horizontal visibility at the station has deteriorated and became equal to or greater than 1000 metres due to mist.

— A day of fog is the day during which the surface horizontal visibility at the station has deteriorated and fell below 1000 metres due to fog.

— A day of haze is the day during which the horizontal visibility at the station has deteriorated and became equal to or greater than 1000 metres due to haze.

— A day of thick haze is the day during which the horizontal visibility at the station has deteriorated and fell below 1000 metres due to thick haze.

— A day of dust or sandrising is the day during which the horizontal visibility at the station has deteriorated and became equal to or greater than 1000 metres due to dust or sandrising.

— A day of dust or sandstorm is the day during which the horizontal visibility at the station has deteriorated and fell below 1000 metres due to dust or sandstorms.

— A day of gale is the day during which the mean surface wind speed reached or exceeded 34 knots at the station for at least 10 minutes.

— A day of clear sky is the day on which the mean cloud amount at the station is less than $\frac{2}{8}$.

— A day of cloudy sky is the day on which the mean cloud amount at the station is $\frac{6}{8}$ or more.

As regards the last two items above, the mean cloud amount for a day is the mean of the 24 hours, the 8 synoptic hours or the 4 main synoptic hours of cloud observations according to the number of the routine observations taken at the station.

TABLE A 5.—Annual number in hours of occurrences of concurrent surface wind speed and direction recorded within specified ranges.

This table gives the annual number in hours of the following :

- Calm winds.
- Variable winds.
- unrecorded winds,
- simultaneous occurrences of surface wind satisfying the specified ranges of speed and direction.

- surface wind blowing from specified ranges of direction irrespective of their speed,
- surface wind satisfying specified ranges of speed irrespective of their direction.

The annual numbers in hours of all elements included in this table are the sum of the corresponding monthly values during the year.

The elements used in preparing this table are the mean hourly values of the surface wind speed and the corresponding mean hourly values of direction taken from the daily records of the surface wind instruments installed at the station. These mean hourly values are extracted for every hour of each day of the year and they refer to a period of 60 minutes centred at the hour.

The number in hours of occurrences of the surface wind falling within the ranges of speed and direction indicated in the table is the number of cases when the mean hourly values of the surface wind as defined have satisfied these ranges.

The number in hours of "variable" winds is the number of cases when the surface wind showed no definite direction over the period of the 60 minutes centred at the hour or when the wind vane was sticking over that period due to the lightness of the wind and not responding to the variation in wind direction ; in such cases the mean wind speed over this period is normally less than 5 knots. The number in hours of "calm" winds is the number of cases where the surface wind has a mean speed of less than one knot over that period, whatever the mean wind direction over the same period is. The number in hours during which the recording instrument failed to record over the whole year is given under a separate column.

The instruments used for recording the surface wind are of the Dines Pressure Tube Anemograph.

This table follows the general lines of Model B of chapter 12 part IV of the WMO Technical Regulations 1959. The ranges of wind speed are (1-10), (11-27), (28-47) knots and 48 knots or more ; the ranges for wind direction are twelve ranges of 30° each, beginning with the range (345°-014°) as being the true north.

UPPER AIR DATA

TABLE B 1.—Annual climatological data of pressure, temperature and dew point at the surface of the station, the standard and the selected pressure surfaces.

The routine upper air observations are taken at 0000 & 1200 UT, a separate table of this type is prepared for each hour.

This table follows the general lines recommended by the Commission for Climatology of the World Meteorological Organisation Rec. 34 (CCL-1), it gives the following data for the hour of observation indicated at the table :

- The number of cases (N) the height of each of the pressure surfaces indicated in the table has been attained during the year, and the number of cases the temperature and dew point at these pressure surfaces have been observed.
- The annual mean values of the atmospheric pressure corrected to the ground level of the station and its highest and lowest values during the year.
- The annual mean values of air temperature at the surface, the highest and lowest values.

- The annual mean values of dew point at the surface.
- The annual mean, the highest and the lowest values of the altitude of each of the pressure surfaces.
- The annual mean, the highest and the lowest values of air temperature at each of the pressure surfaces.
- The annual mean value of dew point at each of the pressure surfaces.

Mean annual values are computed as the arithmetic mean of the twelve monthly mean values.

The monthly mean values are computed as the arithmetic mean of all daily values. Whenever, it is not possible to obtain a complete set of daily values, a useful monthly mean value may be obtained as the mean of available values, taking in consideration ; (a) number of missing observations not more than 10, and (b) there in no continuous period of 5 days without an assigned value.

The instruments used are of the radiosonde modulating frequency recording type ; no corrections for radiation are applied.

The altitudes are given in geopotential metres above mean sea level, temperatures and dew points in degrees celsius.(°C).

TABLE B 2.—Annual mean and extreme values of the freezing level and the first tropopause ; the highest wind speed in the upper air.

The routine upper air observations are taken at 0000 & 1200 U.T. ; a separate table of this type is prepared for each hour as indicated in notes on table B₁. This table is based on wind observations taken by the SCR — 658 or the Metox radiotheodolites working simultaneously with the radiosonde observations. The types of radiosonde instruments used are given in notes to table B₁.

This table gives the following data for each hour of observation :

- The annual mean values of the altitude, pressure and dew point of the freezing level together with the number of observations (N) taken during the year for each element ; the altitudes and months of occurrence, pressures and dew points of the highest and lowest freezing levels observed during the year.

- The annual mean values of altitude, pressure and temperature of the first tropopause together with the number of observations taken during the year for each element, the altitudes and months of occurrences, pressures and temperatures of the highest and lowest first tropopauses observed during the year.

- The direction and speed of the highest wind speed, the altitude, month of occurrence and pressure at which this speed is observed.

The annual mean values of the altitudes of the freezing level and of the first tropopause, and the annual mean values of the pressure and of the dew point or temperature at each of these levels are the arithmetic means of the corresponding monthly mean values. The first tropopause is determined in accordance with the definition adopted by the Executive Committee of the World Meteorological Organization Resolution 21 (EC-IX).

Altitudes are given in geopotential metres above mean sea level, temperatures and dew points in degrees celsius, wind direction in degrees east of the true north on the scale (000-360°) and wind speed in Knots.

Table B 3 — Annual Frequency of Occurrences of Wind Direction within Specified Ranges and The Mean Scalar Wind Speed at The Surface of The Station, The Standard and Selected Pressure Surfaces.

The routine upper air observations are taken at 0000 and 1200 U.T. A separate table of this type is used for each station.

This table, as in the case of table B 1, follows the genral lines recommended by the Commission for Climatology of the World Meteorological Organisation Rec 34 (CCL-1) ; the ranges of wind direction used are twelve ranges of 30° each beginning with the range (345° — 014°) as being the true north. This table gives for each hour of observation the following data of wind analysis at the surface, standard pressure surfaces and a number of selected pressure surfaces.

- The number of cases (N) the wind has been observed from the specified ranges of direction.
- The mean scalar speeds (ff.m) of winds blowing from the specified ranges of wind direction.
- The number of cases of calm winds.
- The total number of cases (TN) the wind has been observed during the year.
- The mean scalar speeds of winds blowing from all directions.

The mean scalar wind speed(ff.m) of winds blowing from each range of direction at a given pressure surface is the arithmetic mean of the ocrresponding monthly mean values of wind speeds. The term "Calm" is used to denote wind speed of less than one knot.

AGRO-METEOROLOGICAL DATA

Annual Review of Agro-Meteorological Stations.

The annual review includes abridged and summarized report on the characteristic features of the different meteorological and micro-meteorological elements. More weight is given in this review to those elements which are of interest to agriculturists.

TABLE C1.—Annual Air Temperature at 1½ metres above Ground

This table gives the following data :

- The annual mean values of the maximum and of the minimum air temperatures.
- Tha annual mean values of the day, the night time and the day time of air temperatures.
- The annual mean values of the duration of air temperatures above specified values.

The annual mean values of the maximum, minimum, night-time mean, day-time mean and mean of day of air temperatures are the arithmetic mean of the corresponding monthly mean values. The monthly mean values of these elements are the arithmetic mean of the corresponding mean daily values.

The mean air temperature of a day is the mean of the eight values of the dry bulb temperature occurring at each of the principal and secondary observation hours, the value at 0000, 0300 & 2100 U.T. being extracted from the record of the dry bulb thermometer of a mercury in steel hygrograph, except at Kharga where they are obtained from visual readings.

The night-time mean temperature of a day is the mean temperature for the period from sunset of the previous day to sunrise of the same day. The day-time mean temperature refers to the period from sunrise to sunset of the same day. Both night-time and day-time mean temperatures are computed from empirical formulae, which may vary from month to month but are common for all centres. These formulae were found by trial comparison with true means of the year 1966. The errors were never permitted to reach a whole degree, and usually stayed equal to or lower than 0.5°C.

The duration of air temperatures above a specified limit of temperature is obtained graphically from the same recording charts, daily to the nearest whole hour.

The maximum (mercury), the minimum (alcohol) and the dry bulb (mercury ventilated) thermometers are freely exposed in louvred Stevenson screens of the Egyptian type with their bulbs at a height of 190 - 195 centimetres above ground for the maximum and minimum thermometers, and 170 cms approximately for the dry bulb thermometer ; the recording thermometer used is of the bi-metallic type and is exposed in a similar screen ; the height of the bi-metallic piece is 165 centimetres approximately above the ground.

TABLE C 2.—Annual Extreme values of Maximum and Minimum air temperatures at $1\frac{1}{2}$ metres above ground, Absolute Minimum air temperature at 5 cms. above ground in different fields.

The extreme values (highest and lowest) of maximum and minimum air temperatures at $1\frac{1}{2}$ metres above ground, and the absolute values (lowest) of minimum air temperatures at 5 cms. above ground in dry fields are extracted from their corresponding daily routine values. Dates of occurrences are included in separate columns beside the corresponding extreme values.

The thermometers used for minimum air temperature at 5 cm. above ground are of the ordinary minimum type (alcohol) with the bulbs screened with small separate screens of horizontal 5 cm. length and 2 cm. diameter metal tubing painted white outside and black inside, and centered on the thermometer bulbs.

TABLE C 3.—Annual values of (Solar + sky) Radiation, Duration of bright sunshine, Relative humidity, Vapour pressure at $1\frac{1}{2}$ metres above ground, Evaporation and Rainfall.

This table gives the following data :

- The annual mean values of the (solar + sky) radiation.
- The annual total actual and total possible durations of bright sunshine, the percentage of the total actual with respect to the total possible duration.
- The annual mean of the day of relative humidity, the mean of relative humidity at 1200 U.T. and the lowest value of relative humidity during the year.
- The annual mean of the day of vapour pressure and the vapour pressure at 1200 U.T., the highest and lowest values of vapour pressure during the year.
- The annual mean values of the evaporation taken by the Piche tube and by class "A" evaporation pan.
- The annual total rainfall, and the maximum rainfall in one day during the year.

The annual mean value of the (solar+sky) radiation is the arithmetic mean of the monthly mean values. The monthly mean value is the arithmetic mean of the daily values. The (solar+sky) radiation is obtained, daily from the records of a Robitzsch actinograph ; the Robitzsch values at Bahtim and Tahrir are regularly compared with the records of an Eppley pyrliometer. The sensitive elements of the Robitzsch actinograph and of the Eppley pyrliometer are at 100 cms. approximately above the ground.

The annual value of the total actual and total possible duration of bright sunshine is the sum of the corresponding daily values during the year. The types of instruments used for the measurement of the duration of bright sunshine, their exposure and the calculation of the total possible duration values are as given in notes on table A1.

The annual mean relative humidity of the day and at 1200 U.T., mean vapour pressure of the day and at 1200 U.T. and mean evaporation are the arithmetic mean of the corresponding monthly mean values.

The relative humidity and vapour pressure values at a certain hour are derived from the readings of ventilated dry and wet bulb mercury thermometers freely exposed in the screen using the Aspirations Psychrometer Tafeln of the Deutschen Wetterdienst 1955. The height of the bulbs is 170 cms approximately above the ground.

The mean relative humidity or vapour pressure for a given day is obtained from the eight principal and secondary observation values which are extracted from the readings of the dry and wet bulb thermometers, the values at 0000, 0300, and 2100 U.T. being extracted from the records of the mercury in steel hygrograph except at Kharga and M. Matruh where these values are obtained from visual readings of the dry and wet bulb thermometers.

The monthly mean values of the relative humidity & vapour pressure are the arithmetic means of the corresponding mean daily values during the month. The lowest values of the relative humidity and its date of occurrence are obtained from the records of a hair hygrograph exposed in the screen, the height of the hair is 170 centimeters approximately above the ground.

The absolute maximum and minimum values of vapour pressure during the year are extracted from the values of the eight principal and secondary observations.

Evaporation measurements are taken once daily at 0600 U.T. from a Piche tube and also a class "A" evaporation pan and give the evaporation for the previous 24 hours. The Piche tube is installed in the screen with the dry bulb, maximum and minimum thermometers; the colour and effective area of the evaporation disc are as given in the notes on table A1. The class "A" evaporation pan is of the type recommended by the Commission of Instruments and Methods of Observation of the World Meteorological Organization Rec 42 (CIMO-56); it is of a cylindrical shape, 25.4 centimeters deep, 120.6 centimeters in diameter (inside dimensions). The pans, except at Bahtim, are freely exposed in the open air in the dry field, its rim at a height of 41 cms. above ground, far from obstacles such as buildings or trees. At Bahtim the pan is protected from animals and birds by a cylindrical cover of the same diameter as the pan and 30 cm height, made of metal wire mesh of one cm. side. Reduction of evaporation by 11%, established by systematic study is being allowed for in the data published.

The types of instruments used for measuring the amount of rainfall, their exposure and the evaluations of these amounts are given in the notes on table A 3.

TABLE C 4.—Extreme Soil Temperature at Different Depths in Different Fields(cms).

The highest and lowest values of soil temperatures at the selected depths are extracted from their corresponding daily routine values.

The soil temperature readings are taken in the dry fields at the specified depths ranging from 2 cms to 300 cms in each field as indicated in the table. These readings are taken regularly during the period from 0600 to 1800 U.T. according to the following schedule, except at Kharga and M. Matruh where the observations are as appropriate but extend in the period between 1800 and 0600 U.T.

- at 0600 U.T. and every three hours for the 2,5 and 10 cms depths.
- at 0600 U.T. and every six hours for the 20 and 50 cms depths.
- at 1200 U.T. for the 100 and 200 cms. depths.
- at 0900 U.T. once every 3 days for the 300 cms depth.

The thermometers used are of the Fuess or the Fridrich type.

TABLE C 5.—Surface Wind.

This table gives the following data :

— The annual mean of the day, the night-time and the day-time mean wind speeds.

— The annual number of days with surface wind speed at 10 metres reaching or exceeding specified limits for at least 5 minutes ; the highest gust recorded during the year and its date of occurrence.

The annual daily mean, the night-time mean and the day-time mean of the surface wind speed are the arithmetic means of monthly mean daily values. The monthly mean values of these elements are the arithmetic mean of the mean daily values. The mean wind speed of the day is computed for the period of 24 hours from 1800 U.T. of the previous day. The night-time mean wind speed is calculated from the total run of air during the period 1800 U.T. of the previous day to 0600 U.T. of that day. The day-time mean is similarly computed for the period 0600 U.T. to 1800 U.T. of the same day.

The type of the wind instrument used is of the run counter of the Lambrecht type, the cups of which are at $1\frac{1}{2}$ metres above the ground.

The annual number of days with surface wind speed reaching or exceeding specified values of velocities (10, 15, 20, 25, 30, 35 & 40 Knots) for at least 5 minutes at any time between 2200 & 2200 U.T. irrespective of its direction are extracted from the daily routine analysis of the surface wind records during the whole year. The daily records of the Dine Pressure Tube Anemograph are used. The highest gust refers to the highest excursion made by the velocity pen on the records during the whole year. The head of the instrument is at a height of 10 metres above ground level.

LIST OF STATIONS APPEARING IN THE REPORT --- SYNOPTIC AND CLIMATOLOGICAL STATIONS
YEAR 1970

District.	Station	Index Number II iii	Latitude °N	Longitude °E	Elevation of the ground in metres (H or Ha)	Altitude of the Station in metres (Hp)	Altitude of the barometer Cistern in metres	Height of Wind recording instruments (metres) above		Synoptic Observations								Hourly Observations (H) Half hourly obs. in (h) (0000-2400)	Upper air observations P (Pilot Balloon) W (Radio Wind) R (Radio Sonde)				Remarks
								above build- ing	above ground	00	03	06	09	12	15	18	21		00	06	12	18	
Mediterranean	Sallum	62	300	31 32 25 11	4.0	6.0	5.2	10	15	x	x	x	x	x	x	x	x	H	P	—	P	—	
	Mersa Matruh . . . (A)	306	31 20 27 13	28.3	30.0	30.0	8	15	15	x	x	x	x	x	x	x	x	H	RW	W	RW	W	
	Alexandria (A)	318	31 12 29 57	3.4	7.0	6.8	10	18	18	x	x	x	x	x	x	x	x	H	P	—	P	—	
	Port Said (A)	333	31 17 32 14	1.9	6.1	6.1	10	19	19	x	x	x	x	x	x	x	x	H	P	—	P	—	
	El Arish	336	31 07 33 45	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	Ghazza	338	31 30 34 27	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Lower Egypt	Tanta	348	30 47 31 00	14.0	14.8	15.4	10	14	14	x	x	x	x	x	x	x	x	H	—	—	—	—	
Cairo Area	Cairo (A)	366	30 08 31 34	94.7	74.5	74.0	14	18	18	x	x	x	x	x	x	x	x	b	—	—	—	—	
	Helwan	378	29 52 31 20	139.3	140.7	140.7	10	20	20	x	x	x	x	x	x	x	x	—	RW	W	RW	W	
Upper Egypt	Fayoum	381	29 18 30 51	22.0	23.3	23.2	10	14	14	—	—	x	x	x	x	x	—	H	—	—	—	—	
	Minya (A)	387	28 05 30 44	29.0	40.0	44.2	7	10	10	x	x	x	x	x	x	x	x	H	P	—	P	—	
	Assyout (A)	393	27 11 31 06	71.0	69.6	69.5	15	20	20	x	x	x	x	x	x	x	x	H	—	—	—	—	
	Luxor (A)	405	25 40 32 42	94.9	88.5	88.4	7	15	15	x	x	x	x	x	x	x	x	H	P	—	P	—	
	Aswan (A)	414	23 58 32 47	200.0	193.5	200.0	10	14	14	x	x	x	x	x	x	x	x	H	RW	W	RW	W	
Western Desert	Siwa	417	29 12 25 29	—15.0	—13.5	—13.3	10	17	17	x	x	x	x	x	x	x	x	H	P	—	P	—	
	Bahariya	420	28 20 28 54	128.0	129.5	129.6	—	—	—	x	x	x	x	x	x	x	x	H	P	—	P	—	
	Farafra	423	27 03 27 58	90.0	91.8	92.1	—	—	—	—	—	x	x	x	x	x	—	H	—	—	P	—	
	Dakhla	432	25 29 29 00	110.0	111.5	111.5	10	15	15	x	x	x	x	x	x	x	x	H	P	—	P	—	
	Kharga	435	25 27 30 32	77.8	72.6	78.6	10	15	15	x	x	x	x	x	x	x	x	H	P	—	P	—	
Red Sea	Tor	459	28 14 33 37	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	Hurghada	462	27 17 33 46	1.0	2.8	2.8	8	12	12	x	x	x	x	x	x	x	x	H	—	—	P	—	
	Quseir	465	26 08 34 18	8.0	11.3	11.3	12	15	15	x	x	x	x	x	x	x	x	H	—	—	—	—	

GENERAL SUMMARY OF WEATHER CONDITIONS FOR THE YEAR 1970

WEATHER

In winter the prevailing weather was generally warm day time intervened with short cold waves during January and February, but cold intervened with few warm days in December. Weather in Spring was changeable characterized with variant khamsin heat waves. Two of these heat waves were excessive : one in April and yielded records for maximum air temperature at Cairo (42.5°C) and Alexandria (43.2°C) on the 12th ; and the second heat wave in May yielding records for maximum air temperature (47.8°C) at both Cairo and Assiout on the 21st. In Summer weather was generally mild in the northern parts, hot in the middle parts and excessively hot in the southern parts. Weather in Autumn was generally mild in the north and hot in the south, intervened with short heat waves.

RAINFALL AND THUNDERSTORMS

The annual rainfall amounts were sub-normal in general.

Light to moderate rain fell during Winter and the transitions mostly over the northern parts and extended in few days to the middle parts. The daily rain was heavy and associated with thunderstorms in few days over scattered localities in the northern parts. In particular it attained records during October at Alexandria (39.0 mms) on the 12th and Ras-el-Teen (55.2 mms) on the 13th ; and during November at Ras-el-Teen (55.4 mms) on the 28th.

SURFACE WIND

The prevailing winds were generally light to moderate W/NW in Winter and early Spring and Nly otherwise. Winds became fresh to strong during several days, mainly in association with transits of depressions. Calms were frequent most of night and early morning intervals in general.

Gales were reported in few days over few scattered localities mainly in the Red Sea and Mediterranean districts. The highest annual frequency was 9 days at Hurghada.

MISCELLANEOUS WEATHER PHENOMENA

Transits of secondary Mediterranean depressions and troughs through the country were associated with scattered rising sand and few cases of sandstorms.

The annual frequency of occurrence of sandstorms was (19 days) at Mersa-Matruh, (15 days) at Aswan and otherwise it ranged between 1 & 8 days.

Early morning mist and fog was rather frequent in Delta, Canal and Cairo ; less frequent in the Mediterranean district and north of Upper Egypt, and was negligible otherwise.

The annual frequency of fog was 34 days at Alexandria, 18 days at Cairo ; otherwise it ranged between 5 and 15 days in general.

THE WEATHER DURING THE YEAR 1970

JANUARY

The prevailing weather during this month was generally warm day-time, cool night-time, though temperature fell to a moderate extent below normal during prevailing cold waves in the last decade.

Light rain in general fell over the Mediterranean district mostly between the 18th & 27th, and extended inland to scattered localities for few days. Rain was associated with thunderstorm over Alexandria area on the 20th.

Early morning mist and fog developed over scattered localities particularly Lower Egypt and Cairo district during the first half of the month.

The prevailing winds during this month were generally light to moderate : W/SW in the northern and middle parts, NWly during few days and Nly in the southern parts.

Surface winds became fresh to strong during several days over scattered localities, mainly in the Mediterranean Sea and Red Sea districts.

Gales were reported at Hurghada on 11th.

FEBRUARY

The prevailing weather during this month was generally warm day-time and cool night-time particularly round the end of the second and fourth weeks. The month was intervened with two prevailing cold waves round the period (18th-25th) during which weather was associated with light rainfall over the Mediterranean Sea district.

Light rising sand blew during several days over scattered localities in the Mediterranean and Red Sea districts. Early morning mist developed during several days over scattered parts in Lower Egypt, Cairo area & north of Upper Egypt districts.

The prevailing winds during this month were generally light to moderate : W/NW in northern parts during the first three weeks, W/SW during the last week. Prevailing surface winds were

Nly elsewhere. Fresh/strong winds blew for several days in scattered localities particularly in the Mediterranean Sea & Red Sea districts.

Gales were reported at Dabaa on the 22nd and at Hurghada on the 5th & 18th.

MARCH

The prevailing weather during this month was mainly characterized by three moderate kham-sin heat waves round the periods (4th-8th), (14th-17th) and (27th-30th). The break down of these heat waves was followed by periods of mild weather, light rainy in north of the country.

Weather was sandy during several days in particular round the 10th, 17th & 21st when sandstorms were reported in scattered places in the northern parts.

Surface winds during this month were generally light to moderate, and were NWly over the northern and middle parts of the Republic. Winds changed to SWly in advance and by the passage of the kham-sin secondary depressions. In the southern parts, light to moderate Nly winds prevailed. Surface winds were fresh to strong during several days over scattered localities particularly in the Mediterranean Sea, and Red Sea districts.

Gales were reported at Sallum on the 8th, & 21st, Sidi Barrani on the 4th & 21st, Mersa Matruh on the 4th, 16th & 21st, Ras El Hikma on the 3rd & 21st, Dabaa on the 8th, 9th, 21st & 30th and Bahtim & Cairo on the 21st.

APRIL

The prevailing weather this month was changeable characterized by four variant kham-sin heat waves round the periods (2nd-4th), (8th-12th), (24th-26th) & (28th-30th). The second heat wave was the most excessive and reached its peak on the 12th, when maximum air temperature attained records at Alexandria and Cairo. The break down of these heat waves was followed by periods of mild spring weather.

The month was rainless in general, apart from the 4th & 18th when scattered light rain fell over north of the Country. Rain was locally heavy and associated with thunderstorms on the 18th.

Weather was sandy over many parts in association with the travelling khamsin depressions and in particular on the 3rd, 4th, 18th & 26th when sandstorms were reported over scattered localities.

The prevailing winds during this month were generally light to moderate Nly. They strengthened for several days over scattered parts, and changed to SWly in advance of the travelling khamsin depressions and to NWly at their rears.

Gale was reported at Hurghada on the 7th.

MAY

The prevailing weather this month was generally changable and almost rainless. Two pronounced khamsin heat waves have been experienced during the periods (8th-13th) and (17th-21st), the second of which was remarkably excessive all over the Country. It yielded new records for maximum air temperature at Cairo and Assiout on the 21st. In addition a moderate heat wave was experienced in Upper Egypt during the first three days of the month. The break down of these heat waves was followed by mild periods.

Weather was sandy over scattered parts of the country on several days, particularly on the 4th, 21st & 25th when widespread sandstorms occurred.

Light to moderate N/NW winds prevailed most of the month in general. Winds became fresh to strong during several days over scattered parts mainly in the Mediterranean, Red Sea and Western Desert districts.

Gales were reported at Dabaa on the 21st, and Hurghada on the 14th, 23rd & 25th.

JUNE

The prevailing weather this month was generally mild and rather humid in the northern parts, hot and rather dry in the middle parts, remarkably hot and dry in the southern parts. Three light heat waves occurred round the periods (8th-12th), (19th-20th) and on the 27th.

Weather was light sandy in several days over scattered parts mainly in west of the Mediterranean, Red Sea & Western Desert districts. Early morning low clouds and scattered mist developed in several days over Delta & Cairo areas.

Light to moderate N/NW winds prevailed most of this month in general. Winds became fresh to strong during several days in scattered localities, mainly in the Mediterranean Sea, Red Sea & Western Desert districts.

Gale was reported at Hurghada on the 2nd.

JULY

The prevailing weather this month was generally mild & humid in the northern parts, hot & rather humid in the central parts, excessively hot & dry in the southern parts. Two moderate heat waves were experienced mainly in land areas round the periods (14th-17th) & (24th-27th).

Early morning low clouds developed frequently over Delta, Canal & Cairo areas, with scattered mist during several days.

Light to moderate Nly and NWly winds prevailed over most parts of the Republic during this month. Winds freshened during several days over scattered localities in the Mediterranean and Red Sea districts.

AUGUST

The prevailing weather this month was generally humid, mild in the northern parts, hot in the middle parts. Weather was excessively hot & dry in the southern parts. Two summer heat waves were experienced round the periods (9th-13th) & (22nd-27th).

Early morning low clouds with scattered mist developed frequently over Delta, Canal & Cairo areas.

Light rising sand was reported during several days over few scattered localities, mainly in the southern parts.

Light to moderate Nly and NWly winds prevailed most of this month. Winds freshened during several days in scattered localities, mainly in the Mediterranean and Red Sea districts.

SEPTEMBER

The prevailing weather this month was generally mild in the northern parts, rather hot in the middle parts and hot in the southern parts. Two heat waves were experienced round the periods (1st-2nd) & (21st-25th). The first heat wave was mainly pronounced in Upper Egypt area. The second heat wave was the most pronounced and affected all parts of the Country. The break down of this heat wave was followed by gradual decrease in temperature till the end of the month, and a rather cold spell was experienced on the 29th & 30th.

The month was characterized by generally high humidity most days of the month and deficient rainfall.

Weather was misty in the early morning in several days over scattered parts in Delta & Cairo areas. Light rising sand was reported in several days over few scattered localities, mainly in the Red Sea, Upper Egypt & Western Desert districts.

Light to moderate Nly and NWly winds prevailed most days of this month in general. Winds were fresh to strong in several days over few scattered localities mainly in the Red Sea & Western Desert districts.

Gale was reported at Hurghada on the 28th.

OCTOBER

The prevailing weather this month was generally mild in the northern & middle parts and rather hot in the southern parts. Two heat waves were experienced in the periods (4th, 5th) & (18th-25th). The second heat wave was of long duration and dry, and reached its peak round the 21st.

Rain was confined to the northern parts where light rain fell on the 12th, 13th, & 27th. Rain was locally heavy and associated with thunderstorm over few coastal localities on the 12th & 13th. The daily rain attained records at Alexandria (39.0 mms) on the 12th and at Ras-el-Teen (55.2 mms) on the 13th.

Early morning low clouds developed frequently over Cairo & Delta areas. Light rising sand was reported during several days in few scattered localities.

Light to moderate Nly and NWly winds prevailed most of this month in general. Winds became fresh to strong during several days in few scattered

localities, mainly in the Mediterranean & Red Sea districts.

NOVEMBER

During this month, four cold waves were experienced and were separated by short warm periods. The first three waves were generally light and prevailed most of the first three weeks during which weather was generally mild during daytime in the north and warm in the south but cool in the night time. The last cold wave was pronounced and prevailed during the period (26th-30th) when temperatures were appreciably subnormal.

Weather was light rainy in general in north of the country during the cold waves. Scattered heavy rain and thunderstorms were reported round the 2nd & 27th. The daily rain attained a record at Ras-el-Teen (55.4 mms) on the 28th.

Early morning mist developed during several days over scattered parts in Delta, Cairo and north of Upper Egypt.

Light to moderate N/NW winds prevailed most of the month over most parts of the Republic. Winds became fresh to strong over local places mainly in the Red Sea district in several days.

DECEMBER

The prevailing weather this month was rather cold day-time and cold night-time. Four consecutive cold waves were experienced covering nearly the whole month. Coldness was intense in the second and third weeks in particular.

Weather was generally light rainy in north of the Republic. Local heavy rain fell over scattered places in the Mediterranean district on the 11th & 12th and was associated with thunderstorms.

Scattered mist and fog developed frequently over Delta, Canal, Cairo & north of Upper Egypt mainly during the second half of the month.

Light to moderate W/NW winds prevailed most of this month in the northern parts, and changed to NEly during the last week. In south of the Country, the prevailing winds were generally light to moderate Nly. Winds became fresh to strong during several days in scattered localities mainly in the Mediterranean and Red Sea districts.

Cairo, October 1972

Chairman (M. F. TAHA)

Board of Directors

SURFACE DATA
TABLE A 1.—ANNUAL VALUES OF THE ATMOSPHERIC PRESSURE, AIR TEMPERATURE,
RELATIVE HUMIDITY, BRIGHT SUNSHINE DURATION & PICHE EVAPORATION

YEAR 1970

STATION	Atmospheric Pressure (mbs) M.S.L		Air Temperature °C										Relative Humidity %		Bright Sunshine Duration (Hours)			Piche Evaporation mms. Mean
			Maximum		Minimum		A+B 2	Dry Bulb		Wet Bulb								
	Mean	D.F Normal or Average	(A) Mean	D.F Normal or Average	(B) Mean	D.F Normal or Average		Mean	D.F Normal or Average	Mean	D.F Normal or Average	Mean	D.F Normal or Average	Total Actual	Total Possible	%		
Ballum	1014.9	+0.3	25.4	+0.1	15.9	+0.3	20.6	20.3	-0.1	15.2	-0.7	55	- 5	—	—	—	8.4	
Mersa Matruh (A)	1015.3	+0.6	24.4	+0.1	14.6	+0.2	19.4	19.2	-0.1	15.4	-0.3	64	- 3	*(3420.5)	*(4415.4)	(77)	8.6	
Aelxandria . (A)	1015.4	+1.3	25.1	+0.1	15.7	-0.1	20.4	20.0	-0.3	16.3	-0.5	60	- 3	3555.7	4444.3	80	6.0	
Port Said . . (A)	1013.6	0.0	25.5	+0.9	17.2	-1.3	21.4	20.7	-0.4	17.1	-0.7	67	- 3	3512.7	4444.3	79	5.7	
El Arish	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Ghazza	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Tanta	1013.9	0.0	27.4	-0.6	12.5	-0.5	20.0	19.3	-0.8	15.4	-0.4	64	+ 2	3578.6	4442.8	81	4.5	
Cairo (A)	1014.2	+0.3	28.0	-0.1	15.5	0.0	21.8	21.3	-0.2	15.6	-0.4	52	- 2	—	—	—	13.3	
Fayoum	—	—	30.2	+0.7	13.9	-0.7	22.0	21.5	-0.4	15.1	-0.5	52	+ 3	—	—	—	6.8	
Minya (A)	1012.6	- 0.7	29.7	-0.1	13.1	-0.1	21.4	21.2	0.0	14.7	-0.3	47	- 3	3833.8	4438.3	86	10.7	
Assyout . . . (A)	1012.8	-0.1	30.2	-0.2	15.0	-0.4	22.6	22.4	-0.6	14.6	+0.1	40	+ 3	—	—	—	14.7	
Luxor (A)	1011.5	+0.3	33.9	+0.5	15.3	-0.3	24.6	23.0	+1.5	15.3	-0.3	35	0	—	—	—	10.0	
Aswan (A)	1011.1	+0.3	34.2	0.0	17.6	+0.1	25.9	25.7	-0.4	14.2	+0.1	22	+ 2	—	—	—	20.6	
Siwa	1014.5	-0.1	29.8	0.0	13.3	+0.2	21.6	21.4	-0.3	13.8	-0.3	40	0	3818.7	4439.9	86	11.6	
Bahariya	1014.2	+0.6	29.7	+0.1	14.2	+0.6	22.0	22.2	+0.2	14.2	-0.2	38	- 2	—	—	—	9.1	
Farafra	1015.4	+0.2	29.9	-0.2	13.2	-0.3	21.6	21.4	-0.6	13.2	+0.3	35	+ 3	—	—	—	14.4	
Dakhla	1014.2	+1.6	30.8	-0.6	13.2	-1.5	22.0	22.0	-0.9	12.9	-0.2	31	+ 3	—	—	—	17.0	
Kharga	1012.8	0.0	32.1	-0.1	15.9	+0.1	23.9	24.3	+0.3	13.6	-0.6	36	- 2	3994.6	4435.6	90	17.6	
Tor	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Hurghada	1011.5	+0.4	27.9	+0.6	18.0	+0.3	23.0	23.3	+0.1	16.8	0.0	48	- 2	—	—	—	12.2	
Quseir	1011.2	+0.1	27.4	-1.0	20.4	-0.3	23.9	24.2	-0.3	17.5	-0.3	48	0	—	—	—	15.3	

* Total for 363 days only.

TABLE A 2.—MAXIMUM AND MINIMUM AIR TEMPERATURES

YEAR 1970

Station	Maximum Temperature °C									Grass Min. Temp.		Minimum Temperature °C								
	Highest	Date	Lowest	Date	No. of Days with Max-Temp.					Mean	Dev. From Normal	Highest	Date	Lowest	Date	No. of Days with Min. Temp.				
					>25	>30	>35	>40	>45							<10	<5	<0	<-5	
Sallum	44.2	12/5	15.3	11/12	181	77	11	4	0	15.2	—	25.9	11/5	6.9	21/2,2/3	39	0	0	0	
Mersa Matruh . . . (A)	43.0	12/5	14.0	12/12	167	37	5	1	0	12.9	—	24.8	12/3	4.2	10/2	79	1	0	0	
Alexandria (A)	43.2	12/4	13.0	12/12	178	60	4	1	0	14.1	—	25.0	23/8	4.4	25/12	66	4	0	0	
Port Said (A)	45.0	21/5	13.3	12/12	200	97	4	2	0	16.5	—	25.5	15/8	6.6	12/12	15	0	0	0	
El Arish	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Ghazza	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Tanta	44.2	21/5	15.2	12/12	226	144	18	3	0	—	—	21.7	12/8	1.9	16/12	156	20	0	0	
Cairo (A)	47.8	21/5	14.2	13/12	230	165	41	4	1	—	—	23.4	26/7	4.1	25/12	56	1	0	0	
Fayoum	47.2	21/5	16.4	20/1	262	187	109	12	1	11.2	—	24.0	12/8	1.3	22/2	113	25	0	0	
Minya (A)	47.7	21/5	15.7	4/2	250	187	101	12	1	11.2	—	24.4	15/7	0.8	29/1	123	33	0	0	
Assyout (A)	47.8	21/5	16.2	12/12	261	195	112	20	2	12.6	—	27.8	21/5	3.6	15/12	93	6	0	0	
Luxor (A)	48.3	20/5	17.0	12/12	312	243	190	79	7	11.5	—	27.2	14/8	2.8	28/12	101	25	0	0	
Aswan (A)	48.3	22/5	17.4	12/12	312	243	182	109	10	—	—	28.5	22/5	5.0	13/12	51	0	0	0	
Siwa	45.6	12/5	17.9	21,26/1	252	178	104	20	1	—	—	24.3	18/7	0.1	23/12	129	25	0	0	
Bahariya	45.9	20/5	16.3	12/12	260	185	118	19	1	12.9	—	26.0	15/7	0.3	16/12	106	24	0	0	
Farafra	46.0	20/5	16.7	4/2	252	180	106	14	1	12.5	—	24.8	12/8	— 1.2	23/12	125	43	2	0	
Dakhla	47.7	21/5	16.3	12/12	268	197	126	25	3	12.8	—	29.8	12/8	— 1.4	15/12	131	71	3	0	
Kharga	48.4	21/5	17.2	12/12	286	210	159	47	4	13.5	—	29.1	12/8	1.2	15/12	92	31	0	0	
Tor	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Hurghada	39.4	21/5	16.9	14/12	249	147	7	0	0	—	—	27.8	18/7,13,14/8	6.0	13/12	25	0	0	—	
Quseir	35.6	25/7	18.2	14/12	248	124	3	0	0	17.8	—	28.7	15/7	9.6	13/12	1	0	0	—	

Table A 3. — SKY COVER AND RAINFALL
YEAR — 1970

Station	Mean Sky Cover (Oct).					Rainfall mms.										
	00	06	12	18	Daily	Total Amount	D. From Normal	Max. Fall in one day		Number of Days with Amount of Rain						
	U.T.	U.T.	U.T.	U.T.	Mean			Amount	Date	<0.1	≥0.1	≥1.0	≥5.0	≥10	≥25	≥50
Sallum	2.9	2.2	3.2	2.1	2.5	60.8	—52.0	16.4	29/1	1	27	10	3	2	0	0
Mersa Matruh (A)	1.7	3.4	2.9	2.3	2.5	64.6	—78.9	10.8	12/11	12	32	15	4	3	0	0
Alexandria . . (A)	3.7	3.5	3.6	3.0	3.3	192.9	0.0	53.3	27/11	5	37	24	10	4	2	1
Port Said . . (A)	—	2.3	1.8	—	—	56.3	—17.7	11.6	26/1	3	30	11	3	2	0	0
El Arish	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ghazza	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tanta	0.7	2.1	1.5	0.8	1.6	30.5	—16.4	8.4	21/1	5	22	5	2	0	0	0
Cairo (A)	1.4	3.0	2.3	1.2	1.9	16.7	— 8.1	9.7	2/11	4	10	4	1	0	0	0
Fayoum	—	1.7	2.0	1.4	—	2.0	— 9.8	2.0	2/11	3	1	1	0	0	0	0
Minya (A)	0.6	1.3	1.5	0.7	1.0	Tr.	— 4.5	Tr.	2/5	1	0	0	0	0	0	0
Assyout (A)	0.3	0.7	0.8	0.6	0.6	0.0	— 0.3	0.0	—	0	0	0	0	0	0	0
Luxor (A)	0.5	0.9	0.9	0.8	0.8	Tr.	— 1.1	Tr.	8/3	1	0	0	0	0	0	0
Aswan (A)	0.5	1.2	1.3	0.7	0.9	0.0	— 0.2	0.0	—	0	0	0	0	0	0	0
Siwa	0.7	1.2	1.9	0.8	1.4	4.6	— 4.8	3.0	9/1	2	2	2	0	0	0	0
Behariya	0.8	1.4	1.7	0.8	1.1	2.3	— 1.8	2.3	9/1	3	1	1	0	0	0	0
Farafra	—	0.8	1.2	0.8	—	Tr.	— 1.8	Tr.	9/1	1	0	0	0	0	0	0
Dakhla	0.3	0.3	0.7	0.3	0.5	0.0	— 0.5	0.0	—	0	0	0	0	0	0	0
Kharga	0.4	0.7	0.9	0.4	0.6	0.0	— 1.1	0.0	—	0	0	0	0	0	0	0
Tor	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hurghada	0.5	1.0	1.2	0.7	1.0	0.1	— 3.2	0.1	8/3	1	1	0	0	0	0	0
Quseir	0.4	1.0	1.1	0.8	0.9	Tr.	— 2.9	Tr.	10/1,8/3,1/11*	4	0	0	0	0	0	0

* More than 3 days.

Table A 4. — DAYS OF OCCURRENCE OF MISCELLANEOUS WEATHER PHENOMENA.

YEAR 1970

Station	Precipitation				Frost	Thunderstorm	Mist Vis \geq 1000 metres	Fog Vis $<$ 1000 Metres	Haze Vis \geq 1000 Metres	Thick Haze Vis $<$ 1000 Metres	Dust or Sandrising Vis \geq 1000 Metres	Dust or Sandstorm Vis $<$ 1000 Metres	Gale	Clear Sky	Cloudy Sky
	Rain	Snow	Ice Pellets	Hail											
Sallum	27	0	0	0	0	1	0	0	0	0	27	2	2	158	11
Mersa Matruh (A)	32	0	0	0	0	4	20	13	3	0	54	19	3	150	14
Alexandria (A)	37	0	0	0	0	8	34	34	8	0	13	2	0	91	23
Port Said (A)	30	0	0	0	0	4	5	1	0	0	8	0	0	—	—
El Arish	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ghaza	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tanta	22	0	0	0	0	2	77	16	0	0	4	0	0	240	2
Cairo (A)	10	0	0	0	0	2	102	18	84	1	45	4	1	214	3
Fayoum	1	0	0	0	0	1	4	0	6	0	7	1	0	—	—
Minya (A)	0	0	0	0	0	0	26	4	42	0	11	3	0	286	1
Assyout (A)	0	0	0	0	0	0	4	0	12	0	21	0	0	323	1
Luxor (A)	0	0	0	0	0	0	0	0	170	1	58	5	0	310	3
Aswan (A)	0	0	0	0	0	0	0	0	20	0	112	15	0	299	0
Siwa	2	0	0	0	0	0	1	0	1	0	8	0	0	278	2
Bahariya	1	0	0	0	0	2	1	0	0	0	15	0	0	272	4
Farafra	0	0	0	0	0	0	0	0	0	0	19	3	0	—	—
Dakhla	0	0	0	0	0	0	0	0	0	0	29	0	0	338	0
Kharga	0	0	0	0	0	0	0	0	1	0	50	1	0	321	1
Tor	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hurghada	1	0	0	0	0	1	0	0	9	0	103	2	9	307	2
Quseir	0	0	0	0	0	1	0	0	3	0	15	0	0	302	2

**Table A 5.—NUMBER IN HOURS OF OCCURRENCES OF CONCURRENT SURFACE
WIND SPEED AND DIRECTION RECORDED WITHIN SPECIFIED RANGES
YEAR 1970**

STATION	calm (hours)	Variable (hours)	Unrecorded (hours)	Wind speed in knots	Number in hours of occurrences of wind blowing from the ranges of directions indicated													All directions
					345	015	045	075	105	135	165	195	225	255	285	315		
					/ 014	/ 044	/ 074	/ 104	/ 134	/ 164	/ 194	/ 224	/ 254	/ 284	/ 314	/ 344		
Sallum	73	7	4	1-10	333	642	686	392	307	176	130	174	222	451	931	1003	5447	
				11-27	137	335	87	28	15	9	29	168	249	458	956	734	3205	
				28-47	0	0	0	0	0	0	0	0	0	0	19	5	24	
				≥ 48	0	0	0	0	0	0	0	0	0	0	0	0	0	
				All speeds	470	977	773	420	322	185	159	342	471	909	1906	1742	8676	
Mersa Matruh . . (A)	72	3	9	1-10	475	246	131	187	199	267	309	252	516	737	352	692	4354	
				11-27	518	96	56	153	139	8	218	230	364	291	698	1405	4254	
				28-47	0	0	0	2	0	1	14	11	3	11	21	5	68	
				≥ 48	0	0	0	0	0	0	0	0	0	0	0	0	0	
				All speeds	993	342	187	342	338	354	532	493	883	1039	1071	2102	8676	
Alexandria (A)	47	47	121	1-10	734	442	285	299	249	260	335	393	439	739	843	1293	6311	
				11-27	203	131	59	8	13	14	35	92	309	417	313	608	2232	
				28-47	0	0	0	0	0	0	0	1	1	0	0	0	2	
				≥ 48	0	0	0	0	0	0	0	0	0	0	0	0	0	
				All speeds	937	573	344	307	262	274	370	486	749	1186	1156	1901	8545	
Port Said (A)	199	1	324	1-10	1455	697	386	373	205	117	166	244	475	901	949	1596	7564	
				11-27	21	13	10	38	9	5	18	75	98	154	111	120	672	
				28-47	0	0	0	0	0	0	0	0	0	0	0	0	0	
				≥ 48	0	0	0	0	0	0	0	0	0	0	0	0	0	
				All speeds	1476	710	396	411	214	122	184	319	573	1055	1060	1716	8236	
Tanta	906	110	356	1-10	986	640	418	347	207	144	179	283	445	500	800	1266	6235	
				11-27	203	77	37	28	13	5	11	14	108	99	137	421	1153	
				28-47	0	0	0	0	0	0	0	0	0	0	0	0	0	
				≥ 48	0	0	0	0	0	0	0	0	0	0	0	0	0	
				All speeds	1189	737	455	375	220	149	190	297	553	599	937	1687	7388	
Cairo (A)	973	17	97	1-10	738	774	463	351	137	142	242	225	238	347	641	958	5256	
				11-27	323	530	238	91	56	98	164	159	132	128	160	337	2416	
				28-47	0	0	0	0	0	0	0	0	0	1	0	0	1	
				≥ 48	0	0	0	0	0	0	0	0	0	0	0	0	0	
				All speeds	1061	1304	701	442	193	240	406	384	370	476	801	1295	7673	
Fayoum	129	38	58	1-10	2957	1800	218	84	96	229	151	355	527	315	406	978	8106	
				11-27	138	166	10	0	0	0	6	11	37	38	13	12	431	
				28-47	0	0	0	0	0	0	0	0	0	0	0	0	0	
				≥ 48	0	0	0	0	0	0	0	0	0	0	0	0	0	
				All speeds	3095	1966	228	84	96	229	157	366	564	353	419	980	8537	
Minya (A)	385	21	68	1-10	3495	901	62	17	14	266	282	172	123	169	266	641	6408	
				11-27	1318	380	0	0	0	3	21	4	0	15	71	66	1878	
				28-47	0	0	0	0	0	0	0	0	0	0	0	0	0	
				≥ 48	0	0	0	0	0	0	0	0	0	0	0	0	0	
				All speeds	4813	1281	62	17	14	269	303	176	123	184	337	707	8286	

**Table A 5 (contd.) - NUMBER IN HOURS OF OCCURRENCES OF CONCURRENT SURFACE
WIND SPEED AND DIRECTION RECORDED WITHIN SPECIFIED RANGES**

YEAR 1970

Station	calm (hours)	variable (hours)	unrecorded (hours)	Wind speed in knots	Number in hours of occurrences of wind blowing from the ranges of direction indicated													All directions
					345	015	045	075	105	135	165	195	225	255	285	315		
					014	044	074	104	134	164	194	224	254	284	314	344		
Assyout (A)	120	233	41	1-10	107	94	104	192	153	95	93	142	1081	2100	1406	631	6204	
				11-27	82	9	1	16	29	27	4	20	81	435	871	586	2161	
				28-47	0	0	0	0	0	0	0	0	0	1	0	0	1	
				≥ 48	0	0	0	0	0	0	0	0	0	0	0	0	0	
				All speeds	189	103	105	208	182	122	97	162	1162	2542	2277	1217	8366	
Luxor (A)	367	63	63	1-10	679	361	186	269	241	616	1294	569	453	1093	1468	687	7856	
				11-27	11	25	11	4	2	4	2	8	12	60	236	36	411	
				28-47	0	0	0	0	0	0	0	0	0	0	0	0	0	
				≥ 48	0	0	0	0	0	0	0	0	0	0	0	0	0	
				All speeds	690	386	197	273	243	620	1296	517	465	1153	1704	723	8261	
Aswan (A)	20	30	9	1-10	2828	516	86	50	57	54	67	51	87	218	546	1761	6321	
				11-27	1193	109	12	7	27	9	12	5	16	38	206	744	2378	
				28-47	1	0	0	0	0	0	0	0	0	0	0	1	2	
				≥ 48	0	0	0	0	0	0	0	0	0	0	0	0	0	
				All speeds	4022	625	98	57	84	63	79	56	103	256	752	2506	8701	
Siwa	737	88	10	1-10	463	743	626	613	632	323	240	165	255	836	1042	1027	6965	
				11-27	92	128	52	27	60	38	53	33	13	25	231	208	960	
				28-47	0	0	0	0	0	0	0	0	0	0	0	0	0	
				≥ 48	0	0	0	0	0	0	0	0	0	0	0	0	0	
				All speeds	555	871	678	640	692	361	293	198	268	861	1273	1235	7925	
Dakhla	188	40	40	1-10	666	320	226	245	197	225	380	336	609	1033	1438	1896	7571	
				11-27	181	91	13	0	4	6	0	0	0	4	98	524	921	
				28-47	0	0	0	0	0	0	0	0	0	0	0	0	0	
				≥ 48	0	0	0	0	0	0	0	0	0	0	0	0	0	
				All speeds	847	411	239	245	201	231	380	336	609	1037	1536	2420	8493	
Kharga	98	106	93	1-10	1950	615	172	120	70	78	66	88	127	155	490	1035	5572	
				11-27	1936	131	1	0	1	5	0	1	3	10	77	724	2889	
				28-47	2	0	0	0	0	0	0	0	0	0	0	0	2	
				≥ 48	0	0	0	0	0	0	0	0	0	0	0	0	0	
				All speeds	3888	746	173	120	71	83	66	89	130	165	567	2359	8463	
Hurghada	83	11	57	1-10	218	222	129	61	89	149	57	38	43	184	1004	419	2613	
				11-27	1514	142	3	3	31	7	2	0	0	100	1421	2496	5719	
				28-47	17	0	0	0	0	0	0	0	0	0	9	251	277	
				≥ 48	0	0	0	0	0	0	0	0	0	0	0	0	0	
				All speeds	1749	364	132	64	120	156	59	38	43	284	2434	3166	8609	
Quseir	70	8	40	1-10	1328	1039	276	122	59	6	97	107	76	219	1095	1233	5655	
				11-27	1448	1675	72	1	0	0	0	0	1	9	54	325	2985	
				28-47	1	0	0	0	0	0	0	0	0	0	1	0	2	
				≥ 48	0	0	0	0	0	0	0	0	0	0	0	0	0	
				All speeds	2777	2114	348	123	59	64	97	107	77	258	1060	1558	8642	

UPPER AIR CLIMATOLOGICAL DATA
TABLE B 1.—ANNUAL MEANS, ABSOLUTE HIGHER AND LOWER VALUES
OF ALTITUDE, AIR TEMPERATURE AND DEW POINT AT
STANDARD AND SELECTED PRESSURE SURFACES.
YEAR 1970

Station	Pressure Surface (Millibar)	Altitude of Pressure Surface (gpm)						Temperature (°C)						Dew Point (°C)	
		N	Mean	Highest		Lowest		N	Mean	Highest		Lowest		N	Mean
				Value	Month	Value	Month			Value	Month	Value	Month		
Mer a Matruh 0000 U.T.	Surface	744	1013mb	1025m.b.	Dec.	1000mb	March	343	17.2	25.5	May	8.0	Dec.	343	12.4
	1000	343	144	236	Dec.	28	March	342	18.1	28.4	May	8.3	Dec.	342	12.7
	850	343	1519	1585	Dec.	1422	Feb.	340	12.8	29.7	May	-1.9	Dec.	339	-1.1
	700	336	3130	3257	Aug.	2970	Jan.	336	4.4	15.8	Aug.	-13.8	Dec.	334	-12.2
	600	332	4372	4540	Aug.	4151	March	332	-3.2	9.0	Aug.	-18.7	March	331	-19.4
	500	330	5791	5996	Aug.	5515	March	330	-12.7	3.5	Aug.	-28.0	Dec.	328	-27.6
	400	325	7457	7735	Aug.	7077	Dec.	325	-24.3	-9.7	July	-41.5	Dec.	318	-37.7
	300	304	9483	9882	Aug.	8985	Dec.	305	-39.0	-25.9	Sept.	-52.1	Jan.	292	-50.7
	250	283	10715	11170	Aug.	10168	Dec.	283	-47.1	-29.2	July	-60.3	Feb.	261	-57.8
	200	256	12181	12680	Aug.	11622	Dec.	255	-54.2	-43.7	Aug.	-65.7	March	182	-63.6
	150	219	14025	14520	Aug.	13465	Dec.	219	-60.6	-52.9	Nov.	-68.5	April	32	-68.9
	100	164	16496	16962	Aug.	15990	Dec.	164	-68.2	-55.8	March	-78.3	Aug.	—	—
	70	114	18669	19062	Aug.	18180	Dec.	114	-66.9	-52.3	May	-82.6	Feb.	—	—
	60	87	19653	20050	July, Aug.	19200	Jan.	87	-64.4	-56.5	Sept.	-76.5	Feb.	—	—
	50	86	20734	21132	Aug.	20290	Jan.	86	-67.7	-54.4	Aug.	-75.0	Feb.	—	—
	40	44	22208	22680	Aug.	21750	Jan.	44	-58.1	-53.3	Aug.	-62.3	Dec.	—	—
	30	37	23911	24412	Aug.	23484	Jan.	37	-56.5	-47.4	Aug.	-63.3	Dec.	—	—
	20	16	26608	27082	Aug.	26064	Jan.	16	-51.3	-45.0	June	-61.6	Dec.	—	—
	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Helwan 0000 U.T.	Surface	341	998m.b.	1009m.b.	Dec.	986m.b.	March	341	17.8	31.8	April	7.4	Dec.	341	10.8
	1000	341	120	217	Dec.	26	March	123	14.8	21.2	Oct.	7.3	Dec.	123	9.2
	850	341	1505	1579	May	1428	Jan.	339	13.9	27.0	April	-1.4	Dec.	339	-0.4
	700	341	3120	3226	May	2962	Jan.	341	5.6	15.9	Aug.	-10.4	Dec.	340	-10.5
	600	341	4362	4499	May	4125	March	341	-1.9	10.3	Aug.	-19.1	Jan.	341	-17.2
	500	337	5788	5936	May	5472	Jan.	337	-11.0	2.0	June	-25.4	Jan., Nov.	337	-25.5
	400	329	7470	7682	Aug.	7058	Jan.	328	-23.0	-6.5	July	-37.4	Jan.	328	-35.2
	300	323	9509	9814	July	9121	Dec.	323	-37.9	-21.1	July	-51.3	Jan.	323	-49.2
	250	309	10741	11103	July	10299	Dec.	305	-46.0	-28.0	July	-58.9	Nov.	301	-55.8
	200	285	12196	12617	July	11628	Jan.	285	-53.8	-46.4	April	-66.1	Nov.	245	-61.5
	150	258	14014	14468	July	13525	Dec.	258	-61.6	-53.5	March	-68.4	March	59	-67.0
	100	227	16482	16917	July	16049	Dec.	227	-69.4	-56.9	Dec.	-79.3	Aug.	—	—
	70	181	18603	18971	July	18240	Dec.	181	-67.3	-59.3	Feb.	-77.5	Feb.	—	—
	60	150	19581	19930	Aug.	19080	March	150	-64.0	-56.0	Sept.	-74.3	Feb.	—	—
	50	148	20674	21027	July	20306	Dec.	148	-61.4	-55.3	Aug.	-70.5	Feb.	—	—
	40	110	22157	22520	Aug.	21744	Jan.	110	-58.4	-51.1	March	-69.3	April	—	—
	30	97	23898	24266	Aug.	23522	Nov.	97	-56.2	-49.5	Feb.	-71.1	Aug.	—	—
	20	50	26534	26938	Aug.	26144	Feb.	50	-49.4	-41.7	March	-57.8	Nov.	—	—
	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Aswan 0000 U.T.	Surface	350	988 m.b.	999 m.b.	Dec.	980m.b.	Jun. Aug.	350	21.3	33.5	May	7.5	Dec.	350	2.6
	1000	350	87	185	Dec.	13	Jun. Aug.	—	—	—	—	—	—	—	—
	850	349	1498	1580	Nov.	1448	Sept.	349	19.5	32.0	May	1.6	Dec.	349	-1.5
	700	347	3139	3225	May	3041	Jan.	347	9.7	22.0	July	-4.0	Jan.	347	-11.0
	600	344	4400	4512	May	4252	Jan.	343	1.4	14.2	June	-8.2	Feb.	338	-17.7
	500	344	5814	5979	May	5647	Jan.	343	-7.5	3.0	Aug.	-16.9	Jan.	338	-26.0
	400	335	7549	7695	July	7302	Jan.	335	-19.1	-8.0	July	-28.2	Dec.	330	-35.2
	300	322	9630	9883	Aug.	9306	Jan.	322	-34.1	-24.9	July	-43.7	Dec.	311	-47.5
	250	306	10884	11153	July	10513	Jan.	306	-42.9	-34.5	Aug.	-56.4	Nov.	297	-55.2
	200	295	12354	12705	Aug.	12033	Jan.	295	-52.7	-43.6	July	-60.8	Dec.	275	-63.4
	150	262	14179	14560	July	13858	Dec.	262	-63.3	-48.0	July	-71.2	Dec.	21	-58.9
	100	240	16612	16996	July	16273	Nov.	240	-74.3	-63.7	Dec.	-81.3	Oct.	—	—
	70	157	18696	19074	July	18428	Feb.	157	-72.1	-59.0	Dec.	-80.3	Jan.	—	—
	60	94	19665	20020	July	19392	Jan.	94	-66.8	-60.8	July, Aug.	-75.8	Feb.	—	—
	50	94	20741	21104	July	20512	April	94	-62.8	-55.8	Nov.	-80.0	April	—	—
	40	59	22204	22580	July	21910	Nov.	59	-59.0	-53.3	Aug.	-63.7	Jan.	—	—
	30	55	23980	24323	July	23726	Nov.	55	-54.8	-49.5	May	-60.0	Jan.	—	—
	20	35	26601	26876	July	26320	Nov.	35	-50.6	-40.3	Aug.	-56.3	Nov.	—	—
	10	2	30164	31250	Sept	29077	March	2	-45.9	-43.0	March	-48.8	Sept.	—	—

N = The number of cases the element has been observed during the year.

* The atmospheric pressure corrected to the elevation of the radiosonde stations.

UPPER AIR CLIMATOLOGICAL DATA
TABLE B 1. (Cont.)—ANNUAL MEANS, ABSOLUTE HIGHER AND LOWER VALUES
OF ALTITUDE, AIR TEMPERATURE AND DEW POINT AT
STANDARD AND SELECTED PRESSURE SURFACES.
YEAR 1970

Station	Pressure Surface (Millibar)	Altitude of Pressure Surface (gpm)						Temperature (°C)						Dew Point (°C)	
		N	Mean	Highest		Lowest		N	Mean	Highest		Lowest		N	Mean
				Value	Month	Value	Month			Value	Month	Value	Month		
Mersa Matruh 1200 U.T.	Surface	347	1013m.b.*	1024m.b.*	Dec	1000m.b.*	March	347	22.4	41.2	May	14.0	Dec.	347	13.3
	1000	346	142	230	Dec	28	March	345	22.4	40.1	May	12.7	Dec.	344	11.7
	850	346	1529	1596	Apr., May	1409	March	346	13.0	28.6	May	0.3	Dec.	343	-1.6
	700	328	3131	3250	Aug.	29.2	Jan.	329	4.8	23.5	May	-9.7	March	322	-12.0
	600	307	4378	4524	Aug.	4151	Jan.	307	-3.0	10.4	Aug.	-15.7	Jan.	304	-19.0
	500	295	5807	5992	Aug.	5503	Jan.	295	-12.4	0.8	Aug.	-26.1	Apr.	293	-26.4
	400	262	7434	7742	Aug.	7087	Jan.	262	-21.5	-9.0	July	-39.0	Apr.	245	-34.2
	300	249	9513	9883	Aug.	9018	Jan.	249	-38.4	-17.8	Aug.	-51.7	Jan.	238	-50.8
	250	235	10751	11163	Aug.	10316	Feb.	235	-46.6	-34.8	July	-58.4	Jan.	209	-57.8
	200	211	12204	12667	Aug.	11640	Jan.	211	-53.6	-45.0	July	-65.1	Jan.	138	-63.1
	150	159	14030	14516	July	13500	Jan.	159	-60.0	-50.5	Feb.	-67.9	Oct.	41	-68.0
	100	104	16537	16985	July	16142	Dec.	104	-68.7	-58.6	Dec.	-79.0	Aug.	—	—
	070	62	18682	19085	Aug.	18373	Dec.	62	-65.6	-59.4	Aug.	-79.1	Feb.	—	—
	060	45	19652	20050	Aug., Sept.	19350	Mar.	45	-61.5	-56.1	Aug.	-74.6	Feb.	—	—
	050	43	20760	21178	Aug.	20436	Dec.	43	-58.8	-48.9	Aug.	-57.6	Aug.	—	—
	040	19	22257	22930	Aug.	21960	Feb.	19	-55.5	-47.5	Nov.	-59.5	Nov.	—	—
	030	16	24004	24508	Aug.	23638	Feb.	16	-52.4	-45.9	Aug.	-61.6	Nov.	—	—
	020	8	26759	27221	Aug.	26345	Dec.	8	-50.5	-42.0	Aug.	-64.3	Nov.	—	—
	010	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Helwan 1200 U.T.	Surface	340	997mb*	1009mb*	Dec.	987mb*	March	340	26.8	44.4	May	13.4	Dec.	340	7.5
	1000	340	113	214	Dec.	21	March	98	22.0	29.4	Apr.	12.0	Dec.	98	5.9
	850	340	1513	1570	May, Dec.	1429	March	340	14.7	32.4	May	-0.6	Dec.	340	-2.8
	700	339	3130	3225	May	2984	Jan.	339	6.4	20.9	April	-7.9	Jan.	339	-14.1
	600	333	4370	4507	May	4166	Jan.	333	-1.4	11.8	Aug.	-15.2	Jan.	333	-20.3
	500	325	5809	5966	July	5562	March	324	-10.4	2.6	July	-24.7	Jan.	324	-29.2
	400	317	7488	7727	July	7108	Jan.	317	-21.9	-6.3	July	-37.0	Feb.	317	-37.7
	300	299	9542	9884	July	9040	Jan.	298	-36.8	-23.5	July	-50.4	Feb.	298	-50.4
	250	283	10778	11184	July	10227	Jan.	283	-45.2	-33.1	July	-57.4	Dec.	281	-57.5
	200	266	12248	12718	July	11678	Jan.	266	-52.7	-38.3	Aug.	-63.8	Nov.	236	-63.8
	150	242	14064	14580	July	13540	Jan.	242	-60.4	-52.3	July	-68.5	Oct.	71	-68.6
	100	213	16548	17046	July	16100	Jan.	213	-68.5	-57.5	Sept.	-80.7	Sept.	—	—
	070	173	18695	19055	Sept.	18287	Feb.	173	-66.3	-58.0	March	-82.5	Aug.	—	—
	060	135	19661	20190	July	19230	Feb.	135	-62.4	-47.5	July	-73.5	Feb.	—	—
	050	134	20769	21424	July	20337	Feb.	134	-58.9	-52.0	Nov.	-70.2	Feb.	—	—
	040	86	22254	22730	Sept.	21700	Jan.	86	-56.1	-50.0	July, Sept.	-70.6	Sept.	—	—
	030	83	24008	24519	Sept.	23505	Jan.	83	-51.0	-46.9	Oct.	-59.3	Nov.	—	—
	020	53	26652	27220	Sept.	26108	Dec.	53	-47.1	-40.7	July	-56.0	Dec.	—	—
	010	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Asswan 1200 U.T.	Surface	347	987 m.b.*	998 m.b.*	Dec.	980 m.b.*	Mar., Aug.	347	33.0	47.5	June	16.4	Dec.	347	4.9
	1000	347	79	175	Dec.	7	Aug.	—	—	—	—	—	—	—	—
	850	346	1503	1553	May	1443	Mar.	346	20.0	32.8	May	2.8	Dec.	345	-5.1
	700	340	3149	3252	May	3042	Jan.	339	10.2	21.0	April	-7.1	Nov.	338	-13.8
	600	331	4420	4532	May	4269	Dec.	330	1.6	12.8	Aug.	-10.1	Nov.	329	-20.5
	500	329	5860	5980	May	5678	Feb.	329	-7.0	2.0	Aug.	-17.9	Nov.	327	-28.1
	400	319	7566	7733	May	7317	Feb.	319	-18.3	-7.3	July	-28.4	Feb.	317	-37.2
	300	308	9640	9893	July	9350	Feb.	307	-34.2	-23.1	July	-42.9	Dec.	298	-49.3
	250	290	10913	11202	July	10601	Nov.	289	-42.2	-33.3	July	-52.7	Dec.	279	-56.8
	200	282	12393	12786	July	12046	Dec.	282	-51.9	-44.3	July	-62.5	Dec.	265	-64.9
	150	260	14216	14623	July	13835	Dec.	260	-62.4	-53.0	April	-76.9	Aug.	45	-70.6
	100	205	16658	17114	July	16316	Jan.	205	-73.2	-65.7	Dec.	-79.8	May, June	—	—
	070	130	18751	19225	July	17930	Jan.	130	-70.9	-61.2	July	-78.9	July	—	—
	060	83	19731	20200	July	19381	Feb.	83	-65.7	-58.9	Nov.	-77.4	Feb.	—	—
	050	82	20813	21120	July	20485	Feb.	82	-60.8	-54.0	July	-75.0	Feb.	—	—
	040	52	22328	22880	July	21885	Feb.	52	-55.1	-49.3	July	-67.5	Feb.	—	—
	030	46	24106	24670	July	23780	Feb.	46	-51.5	-42.7	Feb.	-70.7	Sept.	—	—
	020	27	27458	27458	July	26400	Feb.	27	-45.9	-32.8	July	-51.6	Feb.	—	—
	010	2	31143	31376	Nov.	30910	Feb.	2	-41.0	-35.1	Nov.	-47.0	Feb.	—	—

N = The number of cases the element has been observed during the year.

* The atmospheric pressure corrected to the elevation of the radiosonde stations.

**TABLE B 2.—MEAN AND EXTREME VALUES OF THE FREEZING LEVEL AND THE TROPOPAUSE ;
THE HIGHEST WIND SPEED IN THE UPPER AIR**

YEAR 1970

Station	Freezing Level									First Tropopause									Highest wind speed				
	Mean			Highest			Lowest			Mean			Highest			Lowest			Altitude (gpm.)	Pressure (mb.)	Direction (000-360)°	Speed in knots	
	Altitude (gpm)	Pressure (mb.)	Dew point (°C)	Altitude (gpm)	Pressure (mb.)	Dew point (°C)	Altitude (gpm)	Pressure (mb.)	Dew point (°C)	Altitude (gpm)	Pressure (mb.)	Temperature (°C)	Altitude (gpm.)	Pressure (mp.)	Temperature (°C)	Altitude (gpm.)	Pressure (mb.)	Temperature (°C)					
0000 U.T.	(N)	(N)	(N)							(N)	(N)												
	Mersa Matruh	3809 (334)	650 (334)	-15.2 (333)	6400 (Aug.)	474	-28.0	1280 (Dec.)	876	-3.5	13176 (188)	183 (188)	-62.3 (188)	18080 (July)	82	-77.4	8180 (Apr.)	346	-41.5	12870 (Jan.)	174	270	175
	Helwan. . .	4007 (340)	632 (340)	-13.5 (336)	6200 (July)	481	-21.4	1330 (Dec.)	868	-2.0	13904 (191)	164 (191)	-65.1 (191)	19900 (Apr.)	58	-65.8	7600 (Apr.)	375	-38.3	11100 (Jan.)	231	270	180
Aswan . . .	4654 (344)	584 (344)	-18.7 (336)	6430 (July)	470	-22.1	1710 (Dec.)	830	-5.7	16304 (151)	108 (151)	-73.5 (151)	22485 (July)	40	-53.8	11800 (Mar.)	216	-54.3	12225 (Feb.)	199	240	199	
1200 U.T.	(N)	(N)	(N)							(N)	(N)												
	Mersa Matruh	3843 (307)	645 (307)	-15.0 (307)	5992 (Aug.)	500	-17.7	1520 (Jan.)	840	-3.3	13155 (145)	184 (145)	-62.2 (145)	17930 (July)	85	-77.8	8170 (May.)	352	-42.6	7610 (Mar.)	382	265	168
	Helwan. . .	4150 (320)	621 (320)	-18.1 (320)	6100 (Aug.)	498	-21.5	1260 (Dec.)	875	-4.8	14021 (185)	161 (185)	-64.3 (185)	18940 (Apr.)	68	-71.4	8090 (Nov.)	331	-37.6	13100 (Nov.)	169	255	195
Aswan . . .	4730 (329)	579 (329)	-21.8 (327)	6400 (July)	575	-24.3	2120 (Dec.)	784	-11.8	15745 (118)	110 (118)	-72.5 (118)	21100 (Feb.)	56	-78.1	12000 (Dec.)	202	-60.0	13435 (Feb.)	164	250	180	

(N) = The number of cases the element has been observed during the year.

TABLE B 3.—NUMBER OF OCCURRENCES OF WIND DIRECTION WITHIN SPECIFIED RANGES AND THE MEAN SCALAR WIND SPEED AT THE STANDARD AND SELECTED PRESSURE SURFACES
MERSA MATRUH (A)—YEAR 1970

Time	Pressure Surface (Millibar)	Wind between ranges of direction (000—360°)																				Number of Calm winds	Total number of observations (TN)	Mean scalar wind speed (knots)				
		345		015		045		075		105		135		165		195		225		255					285		315	
		/		/		/		/		/		/		/		/		/		/					/		/	
		014	044	074	104	134	164	194	224	254	284	314	344															
		N	(ff)	N	(ff)	N	(ff)	N	(ff)	N	(ff)	N	(ff)	N	(ff)	N	(ff)	N	(ff)	N	(ff)	N	(ff)	N	(ff)			
		m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m			
0000 U.T.	Surface	26	11	5	6	7	10	4	9	16	10	24	8	28	10	33	7	70	8	51	8	37	14	28	12	14	343	9
	1000	37	15	9	12	6	7	8	11	12	12	15	17	8	12	12	10	16	14	37	12	72	14	53	15	5	290	14
	850	51	16	29	16	5	8	—	—	1	4	6	17	3	19	11	17	17	18	40	17	58	20	67	18	0	288	17
	700	26	16	17	14	3	14	1	10	0	—	0	—	2	25	9	11	21	24	57	25	90	22	50	21	2	278	20
	600	20	16	12	14	4	14	2	14	0	—	1	10	0	—	3	20	27	34	66	28	91	24	41	23	0	267	26
	500	13	16	12	17	2	23	1	10	0	—	0	—	1	10	3	28	36	38	98	36	75	32	23	29	0	264	33
	400	4	14	4	16	5	30	0	—	0	—	0	—	2	14	2	36	47	51	115	44	47	41	24	37	0	250	43
	300	1	30	4	11	2	34	1	16	0	—	0	—	0	—	11	45	73	65	81	58	38	55	12	60	0	223	58
	250	1	35	3	34	3	28	0	—	1	50	0	—	1	11	14	36	62	68	60	65	35	64	5	57	0	185	61
	200	0	—	1	3	1	23	1	17	1	21	1	3	4	38	19	45	47	66	48	67	15	62	5	58	0	143	64
	150	0	—	0	—	0	—	0	—	0	—	0	—	6	38	18	44	39	61	19	60	9	51	1	43	0	92	59
	100	0	—	0	—	0	—	0	—	0	—	3	15	10	24	13	30	17	30	9	52	5	34	0	—	0	57	42
	70	0	—	1	19	3	22	7	36	5	23	3	17	1	8	3	18	1	8	5	17	2	22	0	—	2	33	20
	60	0	—	2	11	4	17	10	21	2	20	0	—	1	3	0	—	1	19	3	31	1	15	0	—	1	25	23
50	0	—	0	—	3	20	13	31	2	14	0	—	0	—	1	32	0	—	3	20	1	33	0	—	0	23	25	
40	0	—	0	—	3	26	7	31	0	—	0	—	0	—	0	—	0	—	1	24	2	22	0	—	0	13	27	
30	0	—	0	—	0	—	3	44	2	12	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	5	33	
20	0	—	0	—	0	—	1	47	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	1	47	
10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
1200 U.T.	Surface	32	11	21	10	12	12	13	13	8	7	4	11	8	18	10	13	11	14	14	18	97	16	115	13	2	347	14
	1000	39	15	14	9	5	12	19	14	10	12	4	9	5	24	9	15	14	15	14	13	68	20	133	16	1	335	16
	850	38	13	19	13	7	7	4	12	3	8	6	14	7	14	17	20	37	17	51	17	85	17	60	15	2	336	16
	700	24	16	24	14	3	18	2	10	0	—	1	7	6	14	10	25	40	22	76	22	78	23	48	21	0	312	21
	600	17	18	7	18	7	12	6	7	1	2	0	—	5	13	8	19	43	28	98	26	53	28	43	24	0	288	25
	500	7	22	6	18	7	18	0	—	2	6	1	11	3	24	8	23	52	37	103	36	58	31	27	27	0	274	33
	400	5	18	5	29	3	29	2	14	0	—	0	—	1	55	4	66	59	43	114	49	41	41	20	38	0	254	43
	300	4	41	1	4	3	42	2	12	0	—	0	—	2	16	6	52	48	59	86	60	45	58	14	51	0	211	56
	250	3	24	0	—	2	46	2	20	1	9	0	—	0	—	12	44	38	75	83	71	30	66	11	49	0	182	64
	200	0	—	0	—	0	—	2	20	0	—	0	—	5	19	9	58	34	67	57	73	25	58	6	60	0	138	63
	150	0	—	0	—	0	—	0	—	0	—	1	21	5	32	12	39	24	57	28	62	17	61	4	40	0	91	58
	100	0	—	0	—	0	—	0	—	1	22	4	20	4	18	9	24	14	26	11	44	5	35	1	33	0	49	32
	70	0	—	0	—	0	—	3	17	5	24	2	15	2	14	0	—	5	23	4	24	3	25	0	—	0	24	22
	60	0	—	0	—	1	4	4	26	3	19	2	18	1	18	0	—	2	14	2	18	4	14	1	16	0	20	17
50	0	—	0	—	2	11	6	34	2	24	1	19	1	5	0	—	0	—	4	16	1	12	0	—	0	17	18	
40	0	—	0	—	0	—	4	35	1	30	0	—	1	12	0	—	0	—	2	19	2	20	0	—	0	10	21	
30	0	—	0	—	1	11	3	31	1	39	0	—	1	34	1	20	0	—	1	22	1	40	0	—	0	9	24	
20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	

N = The number of cases the wind has been observed from the range of direction during the year.
 TN = The total number of cases the wind has been observed for all directions during the year.

TABLE B 3 (contd.)—NUMBER OF OCCURRENCES OF WIND DIRECTION WITHIN SPECIFIED RANGES AND THE MEAN SCALAR WIND SPEED AT THE STANDARD AND SELECTED PRESSURE SURFACES.
HELWAN—YEAR 1970

Time	Pressure Surface (Millibar)	Wind between ranges of direction (000—360°)																								Number of Calm winds	Total number of Observations (TN)	Mean scalar wind speed (knots)
		345		015		045		075		105		135		165		195		225		255		285		315				
		/		/		/		/		/		/		/		/		/		/		/		/				
		N	(ff)	N	(ff)	N	(ff)	N	(ff)	N	(ff)	N	(ff)	N	(ff)	N	(ff)	N	(ff)	N	(ff)	N	(ff)	N	(ff)			
		m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m			
0000 U.T.	Surface	95	6	91	7	22	7	18	7	18	4	7	4	2	6	2	5	3	4	3	4	7	6	48	5	25	341	6
	1000	29	9	43	12	15	13	4	9	7	3	2	6	1	4	2	13	1	8	6	8	18	8	23	9	2	153	10
	850	68	17	51	17	14	17	12	13	5	7	4	11	9	16	21	18	35	17	27	16	36	18	57	17	0	339	17
	700	35	24	17	18	12	13	4	16	4	14	1	14	8	14	15	27	50	26	74	24	65	22	50	18	1	336	21
	600	21	28	10	16	1	13	0	—	1	8	2	24	5	25	13	32	79	29	86	32	76	25	38	23	1	333	28
	500	17	28	7	13	1	24	0	—	1	14	1	16	4	27	16	40	83	38	102	41	60	32	23	30	0	315	34
	400	8	35	1	72	1	48	0	—	0	—	1	14	3	50	10	44	97	49	101	50	42	53	22	33	1	287	47
	300	4	66	2	54	1	39	1	7	0	—	1	7	2	60	23	50	80	67	72	63	32	48	9	48	1	228	60
	250	3	70	0	—	1	86	0	—	0	—	1	20	7	21	22	51	61	76	61	72	19	61	6	72	0	181	69
	200	0	—	1	74	0	—	1	25	0	—	3	27	3	35	20	58	48	66	38	74	19	71	2	112	0	135	74
	150	0	—	1	96	0	—	2	27	0	—	0	—	10	38	12	56	29	61	17	67	8	50	0	—	0	79	65
	100	0	—	0	—	0	—	0	—	2	16	1	41	9	29	6	25	15	46	6	50	3	39	0	—	0	42	44
	70	0	—	0	—	3	34	4	20	3	27	1	31	2	30	5	23	2	18	1	3	2	12	0	—	1	24	24
	60	0	—	0	—	2	27	7	34	1	14	4	22	1	3	0	—	2	42	1	14	1	15	1	18	0	20	25
50	1	12	0	—	0	—	10	32	3	24	0	—	2	12	0	—	0	—	1	28	0	—	0	—	0	—	17	23
40	0	—	0	—	2	44	7	38	1	40	0	—	0	—	1	51	0	—	0	—	0	—	0	—	0	—	11	41
30	0	—	0	—	2	22	4	41	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—	6	30
20	0	—	0	—	0	—	3	39	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—	3	39
10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1200 U.T.	Surface	63	9	46	10	10	9	3	16	1	4	1	4	3	6	26	7	28	7	39	7	35	8	80	8	5	340	8
	1000	23	11	20	12	9	12	1	7	1	5	0	—	0	—	5	8	5	5	9	10	13	13	10	8	2	98	12
	850	67	14	54	13	22	15	10	13	8	11	5	7	7	17	17	12	29	17	35	17	39	16	45	14	0	338	15
	700	26	18	14	16	10	11	1	4	3	14	4	13	9	18	25	19	67	26	72	22	57	24	44	20	0	332	20
	600	14	16	7	15	2	14	3	8	2	8	0	—	11	20	25	26	74	31	94	30	57	26	34	25	0	323	27
	500	7	25	3	21	0	—	0	—	0	—	3	53	4	44	20	26	100	36	93	43	46	31	30	27	0	306	37
	400	5	36	2	46	0	—	0	—	1	4	3	6	3	20	21	49	90	60	94	51	36	43	18	34	0	273	49
	300	5	35	1	47	2	38	0	—	1	25	3	12	2	11	19	54	63	71	73	63	32	62	9	57	0	210	60
	250	3	44	1	18	2	24	0	—	0	—	2	28	4	26	20	46	69	68	44	66	25	58	9	39	0	179	62
	200	2	56	1	54	0	—	0	—	0	—	2	12	8	28	15	50	47	78	30	77	17	67	4	37	0	126	72
	150	1	65	0	—	0	—	0	—	0	—	2	36	10	28	15	52	28	70	16	64	13	67	3	39	0	88	64
	100	0	—	0	—	0	—	1	35	2	22	9	26	7	28	4	52	6	56	12	42	4	46	2	29	0	47	43
	70	1	11	0	—	1	44	5	42	11	30	2	34	1	10	1	10	1	34	5	26	2	47	0	—	0	30	29
	60	0	—	0	—	2	18	8	40	4	28	1	18	1	40	0	—	3	33	3	40	0	—	0	—	0	22	35
50	0	—	0	—	1	49	8	33	4	32	1	6	1	25	0	—	2	28	4	32	0	—	0	—	0	21	32	
40	0	—	0	—	0	—	6	46	6	35	0	—	2	12	1	10	0	—	2	28	0	—	0	—	0	17	27	
30	0	—	0	—	0	—	7	38	2	36	0	—	0	—	0	—	0	—	1	27	0	—	0	—	0	10	34	
20	0	—	0	—	0	—	3	43	0	—	0	—	0	—	0	—	0	—	1	57	0	—	0	—	0	4	46	
10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

N = The number of cases the wind has been observed from the range of direction during the year.

TN = The total number of cases the wind has been observed for all directions during the year.

**TABLE B 3 (contd.)—NUMBER OF OCCURRENCES OF WIND DIRECTION WITHIN SPECIFIED RANGES AND THE MEAN SCALAR WIND SPEED AT THE STANDARD AND SELECTED PRESSURE SURFACES.
ASWAN (A)—YEAR 1970**

Time	Pressure Surface (Millibar)	Wind between ranges of direction (000—360°)																								Number of Calm winds	Total number of observations (TN)	Mean scalar wind speed (knots)
		345	015	045	075	105	135	165	195	225	255	285	315															
		/	/	/	/	/	/	/	/	/	/	/	/															
		014	044	074	104	134	164	194	224	254	284	314	344															
N	(ff)	N	(ff)	N	(ff)	N	(ff)	N	(ff)	N	(ff)	N	(ff)	N	(ff)	N	(ff)	N	(ff)	N	(ff)	N	(ff)					
	m		m		m		m		m		m		m		m		m		m		m		m					
0000 U.T.	Surface	153	9	30	8	6	6	2	8	7	6	2	9	2	4	0	—	2	9	3	6	34	12	103	11	6	350	9
	1000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	850	51	10	51	11	30	10	33	8	13	9	13	11	5	7	5	7	11	9	21	8	54	11	50	9	0	337	10
	700	16	11	16	10	11	11	13	12	15	12	5	10	12	13	32	18	59	18	80	18	49	13	27	14	0	335	16
	600	7	11	10	9	5	18	7	8	9	7	9	9	8	13	25	24	78	24	79	21	56	17	30	14	1	324	19
	500	9	19	14	14	10	7	8	12	14	10	16	8	8	9	10	12	71	34	108	28	39	22	14	17	0	321	25
	400	4	12	10	14	11	12	15	10	5	10	9	13	13	11	20	14	66	44	95	37	56	26	9	15	0	313	32
	300	3	23	0	—	8	15	17	13	12	10	4	8	15	10	22	37	63	58	101	49	49	40	6	20	0	300	44
	250	1	52	3	6	5	8	17	16	14	16	9	11	13	20	16	19	62	57	97	64	38	60	8	42	0	283	52
	200	1	16	2	12	2	18	14	20	18	22	13	18	21	17	15	25	59	68	89	73	25	74	8	66	0	267	59
	150	0	—	0	—	1	36	12	25	24	29	19	34	18	21	8	28	45	67	81	72	25	71	3	54	0	236	56
	100	0	—	0	—	0	—	10	33	27	31	17	24	5	17	9	22	34	42	56	42	14	38	0	—	0	172	38
	70	0	—	0	—	3	27	20	20	20	23	7	16	3	16	3	10	6	16	23	22	3	32	1	24	0	89	24
	60	0	—	0	—	3	15	27	22	12	20	5	12	0	—	2	10	8	16	8	22	4	32	0	—	1	70	21
	50	1	12	2	8	5	24	29	23	4	13	2	11	1	7	1	10	1	13	8	16	1	15	0	—	1	56	21
40	2	6	0	—	4	23	24	27	4	34	1	7	1	9	1	6	2	7	5	16	4	13	1	10	1	50	23	
30	2	10	1	5	7	32	16	36	2	26	0	—	0	—	0	—	0	—	7	20	1	12	0	—	0	36	27	
20	0	—	0	—	1	54	6	43	2	41	0	—	0	—	0	—	0	—	1	10	1	9	0	—	0	11	30	
10	0	—	0	—	0	—	1	53	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	1	53	
1200 U.T.	Surface	169	11	33	9	5	6	5	5	9	6	5	7	6	9	5	7	3	10	19	8	22	9	62	10	4	347	10
	1000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	850	49	12	23	11	22	9	21	11	13	7	10	10	5	18	8	11	18	11	33	9	82	11	58	11	0	342	11
	700	20	13	9	8	12	12	5	11	10	7	12	11	21	12	35	19	62	17	65	18	46	16	34	16	0	331	16
	600	13	10	7	14	7	10	6	8	8	8	9	10	17	12	46	18	74	23	71	21	46	18	23	16	0	327	20
	500	11	13	10	15	16	8	11	10	8	10	7	7	14	9	29	16	68	26	99	27	40	24	9	21	0	322	24
	400	4	8	10	24	15	12	18	12	17	13	7	11	7	12	18	19	62	41	105	36	37	35	12	23	0	312	34
	300	2	24	6	24	7	9	24	16	15	11	14	10	12	12	18	37	53	57	97	51	40	50	9	22	0	297	44
	250	1	77	2	10	7	14	16	16	19	16	10	14	17	18	15	16	51	66	86	66	42	58	11	48	0	277	53
	200	0	—	0	—	5	19	10	18	27	24	15	18	19	17	7	26	47	76	85	72	34	68	9	64	0	258	59
	150	0	—	0	—	2	20	13	22	27	27	21	24	10	28	9	18	37	83	82	67	25	66	3	76	0	229	57
	100	1	22	0	—	1	37	11	32	30	27	15	30	5	22	6	21	25	43	54	41	11	51	2	24	0	161	40
	70	2	17	0	—	3	13	24	25	20	17	4	14	2	11	1	9	7	24	14	30	8	23	1	8	0	86	26
	60	1	5	0	—	5	12	19	30	13	24	2	11	1	14	1	10	4	18	9	20	3	29	2	13	1	61	24
	50	1	6	1	9	1	5	17	24	14	34	1	27	1	7	1	8	2	12	8	21	3	14	0	—	0	50	23
40	0	—	0	—	1	2	18	24	9	32	2	18	1	11	0	—	0	—	6	24	2	26	0	—	0	39	26	
30	0	—	0	—	0	—	11	33	7	25	0	—	2	9	0	—	2	20	2	30	1	36	0	—	0	25	26	
20	0	—	0	—	2	27	2	52	0	—	1	7	0	—	0	—	1	47	1	22	0	—	0	—	0	7	39	
10	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—	1	56	0	—	0	—	0	1	56	

N = The number of cases the wind has been observed from the range of direction during the year.

TN = The total number of cases the wind has been observed for all directions during the year.

REVIEW OF AGRO-METEOROLOGICAL STATIONS

MERSA MATRUH — YEAR 1970

For the year as a whole the mean daily air temperature and relative humidity were about normal and the total annual rainfall was markedly below normal.

Comparing the mean values of elements in the months of the year with the corresponding normal values we find the following :

The mean daily air temperature was above normal in January, February & March ; below normal in June, October, November & December ; and about normal in April, May, July August & September.

The mean daily relative humidity was above normal in January, April , June & November; below normal in March ; and about normal in the other months of the year.

The total monthly rainfall was markedly below normal in January, February & December; below normal from March to June inclusive and in October ; and above normal in November.

Considering the variation of the mean values of elements in the months of this year we find the following :

The mean daily actual sunshine duration was highest in July and lowest in December.

The mean daily piche evaporation was highest in August and lowest in January.

The extreme maximum soil temperatures reached the highest value in July for 2 & 10 cm. depths; in August for 5, 20, 50 & 100 cm. depths and in both September & October for 200 cm. depth.

The extreme minimum soil temperatures reached the lowest value in December for depths between 2 & 50 cm inclusive and in March for the 100 & 200 cm depths.

TAHRIR — YEAR 1970

This year was rather normal as regards the mean air temperature and relative humidity. The total annual rainfall was above normal.

The characteristic features of the year can be summarized in the following extreme mean values of elements acquired in the months of the year since the year 1961 :

March : The lowest mean monthly relative humidity.

June : The lowest mean of day, mean maximum and mean minimum air temperatures.

August : The lowest mean monthly pan evaporation.

September : The highest mean actual sunshine duration and the lowest mean pan evaporation.

October : The lowest mean of day and mean minimum air temperatures, the highest mean actual sunshine duration.

November : The highest monthly rainfall.

December : The lowest mean of day, mean maximum and mean minimum air temperatures.

Comparing the mean values of elements in the months of the year with the corresponding average values reveals the following :

The mean daily air temperature was above average in January, February & March ; below average in June, July, August, October, November & December ; and about average in April, May & September.

The mean daily relative humidity was above average in April June & December ; below average in March and about average otherwise.

The total monthly rainfall was above average in March, April, October & November ; below average in January, February & December and about average otherwise.

The mean daily actual sunshine duration was above average in January, February September & October and about average otherwise.

The mean daily pan evaporation was about average in January, February & March ; and below average in April to December inclusive.

The extreme maximum soil temperatures at depths between 2 & 100 cm. were generally higher than the corresponding values of last year in January, April, July & August ; generally lower than last year in February, March, June, September, October & December ; and the departures were irregular in May & November.

The extreme minimum soil temperatures at depths between 2 & 100 cm. were generally higher than last year in January, February, May & July ; generally lower than last year in April, June, from August to December and the departures were irregular in March.

BAHTIM — YEAR 1970

For the year as a whole the mean daily air temperature and relative humidity were about the corresponding values of last year. The total annual rainfall was 10.8 mm. against 24.6 mm for last year

Comparing the mean values of elements in the months of the year with the corresponding values of last year, we find the following :

The mean daily air temperature was higher than last year in January, April, July & August ; and lower than last year in other months of the year.

The mean daily relative humidity was higher than last year in December ; lower than last year in May and about the value of last year otherwise.

The total monthly rainfall was markedly lower than last year in January, lower in March ; higher than last year in November and about the value of last year otherwise.

The mean daily actual sunshine duration was higher than last year in January, March, April, May & October ; lower than last year in December and about the value of last year otherwise.

The mean daily pan evaporation was higher than last year in January, April & May ; lower than last year in February, June, & December and about the value of last year otherwise.

The extreme maximum soil temperatures at depths between 2 & 100 cm. were higher than last year in January, April, May, July & August ; generally lower than last year in February, June, September to December and the departures were irregular in March.

The extreme minimum soil temperatures at depths between 2 & 100 cm. were higher than last year in January to April inclusive & July ; generally lower than last year in June, September to December inclusive ; and the departures were irregular in May & August.

KHARGA — YEAR 1970

For the year as a whole, the mean daily air temperature and relative humidity were about average.

The characteristic features of the year can be summarized in the following extreme mean values of elements acquired in the months of the year since the year 1964 :

January : The highest mean daily, mean maximum and mean minimum air temperatures.

February : The highest mean actual sunshine duration.

April : The highest mean daily and mean minimum air temperatures.

May : The highest mean maximum air temperature, the highest mean pan evaporation.

June : The lowest mean daily, mean maximum & mean minimum air temperatures, the highest mean relative humidity.

July : The lowest mean pan evaporation.

August : The lowest mean daily and mean maximum air temperatures, the lowest mean pan evaporation.

September : The lowest mean relative humidity, the lowest mean pan evaporation.

December : The lowest mean daily and mean maximum air temperatures.

Comparing the mean values of elements in the months of the year with the corresponding average values we find the following :

The mean daily air temperature was above average in January, February, April & May ; below average in June, October, November & December and about average in other months of the year.

The mean daily relative humidity showed small departures from average between 1% & 4% in all months of the year.

The year was rainless against 0.8 mm. for average annual rainfall.

The mean daily actual sunshine duration was about average in all months of the year with small departures between 0.1 & 0.6 hour.

The mean daily pan evaporation was above average in April & May ; below average in June, July, August & September and about average otherwise.

Comparing the extreme soil temperatures at depths between 2 and 100 cm. in the months of the year with the corresponding values of the year 1969 we find the following :

The extreme maximum soil temperatures were generally higher than last year in January, April, May & July ; and generally lower than last year in the other months of the year.

The extreme minimum soil temperatures were generally higher than last year in January, February, April & August and generally lower than last year in the other months of the year.

**TABLE C 1.—AIR TEMPERATURE AT 1½ METRES ABOVE GROUND
YEAR — 1970**

STATION	Air Temperature (°C)					Mean Duration in hours of daily air temperature above the following values										
	Mean Max.	Mean Min.	Mean of the day	Night time mean	Day time mean	—5°C	0°C	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C	45°C
Mersa Matruh . .	24.4	14.6	19.2	17.1	21.0	24.0	24.0	24.0	22.9	18.1	10.6	4.0	0.3	0.0	0.0	0.0
Tahrir	28.3	13.3	20.0	16.5	22.9	24.0	24.0	23.8	22.0	17.7	11.9	5.5	2.3	0.2	0.0	0.0
Bahtim	28.1	12.1	19.5	15.8	22.8	24.0	24.0	23.7	21.5	17.0	11.2	5.6	2.4	0.2	0.0	0.0
Kharga	32.1	15.9	24.3	21.0	27.1	24.0	24.0	23.9	22.7	20.2	16.2	11.4	6.4	2.8	0.4	0.0

**TABLE C 2.—EXTREME VALUES OF AIR TEMPERATURE AT 1½ METRES ABOVE GROUND,
ABSOLUTE MINIMUM AIR TEMPERATURE AT 5cms ABOVE GROUND
OVER DIFFERENT FIELDS**

YEAR 1970

STATION	Max. Temp. at 1½ metres (°C)				Min. Temp. at 1½ metres (°C)				Min. Temp. at 5 cms. above (°C)			
	Highest		Lowest		Highest		Lowest		Dry soil		Grass	
	Value	Date	Value	Date	Value	Date	Value	Date	Value	Date	Value	Date
Mersa Matruh	43.0	12/5	14.0	12/12	24.8	12/8	4.2	10/2	0.8	10/2	—	—
Tahrir	45.9	21/5	15.6	13/12	22.5	14/7	1.0	16/12	— 0.4	29/1	—	—
Bahtim	46.7	21/5	15.1	13/12	22.0	12/8	0.4	16/12	— 4.0	16/12	—	—
Kharga	48.4	21/5	17.2	12/12	29.1	12/8	1.2	15/12	— 0.9	15/12	—	—

**TABLE C 3.—(SOLAR + SKY) RADIATION, DURATION OF BRIGHT SUNSHINE, RELATIVE
HUMIDITY, VAPOUR PRESSURE AT 1½ METRES, EVAPORATION & RAINFALL
YEAR 1970**

STATION	Solar + Sky) Radiation gm. cal/cm²	Duration of Bright Sunshine (hours)			Relative Humidity %				Vapour pressure (mms)						Evapora- tion(mms)		Rainfall (mms)		
		Total Actual monthly	Total Possible monthly	%	Mean of day	1200 U.T.	Lowest	Date	Mean of day	1200 UT	Highest	Date	Lowest	Date	Piche	Pan class A	Total Amount Monthly	Max. Fall- in one day	Date
Mersa Matruh	—	(3420.5)	(4415.4)	(77)	68	55	3	16/3	11.6	11.8	23.1	10/8	0.9	16/3	8.5	—	64.6	10.8	12/11
Tahrir . . .	506.8	3667.4	4442.3	82	66	41	8	18/5	11.5	10.7	21.6	11/8	3.3	17/3	7.1	7.17	42.5	18.3	2/11
Bahtim . . .	528.8	3529.9	4441.3	79	4	39	8	21/5	10.8	10.4	22.3	11/8	2.2	3/3	8.0	7.25	10.8	4.2	7/11
Kharga . . .	481.6	3994.6	4435.6	90	32	21	4	24/4	6.7	6.7	15.2	1/8	1.1	28/2	17.2	14.25	0.0	0.0	—

* Total for 363 days only.

TABLE C 4.—EXTREME SOIL TEMPERATURE AT DIFFERENT DEPTHS IN DIFFERENT FIELDS (CMS)

YEAR 1970

Station	Highest (H) Lowest (L)	Dry field								Grass							
		2	5	10	20	50	100	200	300	2	5	10	20	50	100	200	300
M. Matruh. . .	H	44.5	39.5	35.0	31.2	29.0	27.8	25.4	—	—	—	—	—	—	—	—	—
	Date	17/7	6/8	17/7	11/8	2,12 & 14/8	18/8	16,18/9 & 4/10	—	—	—	—	—	—	—	—	—
	L	5.8	6.6	8.2	11.8	14.5	16.6	19.2	—	—	—	—	—	—	—	—	—
	Date	25/12	25/12	27/12	26/12	25,26 & 27/12	4/3	12.15 & 17/3*	—	—	—	—	—	—	—	—	—
Tahrir.	H	55.3	48.8	43.0	37.4	32.9	31.0	29.0	28.0	—	—	—	—	—	—	—	—
	Date	15/7	17/7	17/7	17/7 & 8/8	12/8	15/8	29,30 & 31/8	12/9	—	—	—	—	—	—	—	—
	L	4.5	5.8	7.1	9.9	13.4	17.1	20.0	21.2	—	—	—	—	—	—	—	—
	Date	29/1	16/12	16/12	16/12	17/12	28,29 & 31/12	14,15 & 27/2*	9/3	—	—	—	—	—	—	—	—
Bahtim	H	55.0	45.4	39.6	35.6	32.8	31.1	28.5	27.1	—	—	—	—	—	—	—	—
	Date	18/5	15/7 & 26/8	15,16/7 & 12/8	12/8	15,16/8	30,31/8	30/9 & 6/10*	26/10	—	—	—	—	—	—	—	—
	L	3.8	7.2	11.4	15.5	18.6	20.3	22.1	23.1	—	—	—	—	—	—	—	—
	Date	16/12	16/12	16/12	25/12	27,30/1	26,27 & 28/2*	18,19 & 21/3*	23,27 & 30/4*	—	—	—	—	—	—	—	—
Kharga	H	62.4	51.7	44.2	38.0	35.6	33.4	31.2	30.3	—	—	—	—	—	—	—	—
	Date	21/5	21/5	21/5	17/7 & 12/8	14/8	31/7	31/8,29/9 & 8/10*	9,20, 24/10	—	—	—	—	—	—	—	—
	L	3.7	7.0	11.5	16.4	20.3	23.2	25.2	26.7	—	—	—	—	—	—	—	—
	Date	15/12	23/12	15/12	14/12	29,30/12	8,9,10/2*	5/3	6,12 & 17/4*	—	—	—	—	—	—	—	—

* More than three dates.

TABLE C 5.—SURFACE WIND
YEAR 1970

STATION	Wind Speed m/sec at 1½ metres			Days with surface wind speed at 10 metres							Max. Gust (knots) (10 metres)	
	Mean of the day	Night time mean	Day time mean	≥ 10 (knots)	≥ 15 (knots)	≥ 20 (knots)	≥ 25 (knots)	≥ 30 (knots)	≥ 35 (knots)	≥ 40 (knots)	Value (knots)	Date
M. Matruh .	4.4	3.4	5.3	365	310	187	75	37	11	7	58	8/3
Tahrir . . .	2.2	1.5	2.9	326	158	42	16	6	0	0	42	21/3 & 21/5
Bahtim. . .	—	—	—	—	—	—	—	—	—	—	—	—
Kharga . .	3.7	2.8	4.7	340	256	130	33	6	0	0	40	24, 25/5

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First Under-Secretary of State

ALY SULTAN ALY

Chairman of the Board of Directors